The Journal of the American Medical Association

VOL. XXIV. CHICAGO, JANUARY 5, 1895. No. 1.

ORIGINAL ARTICLES.

TYPHOID FEVER IN INFANTS.

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ST. LOUIS, MO.

Time out of mind the general sentiment in the profession has been in favor of the thought that typhoid fever is not a disease incident to early childhood; but when we remember that the Eberth bacillus is the definite cause of the disease and that it is usually carried through polluted drinking water, the query may well be presented, Why should children who drink water escape typhoid fever any more than those of larger growth?

Age materially affects the liability to the disease, it being especially a disease of youthful vigorous individuals of 15 to 30 years. It is true that above that age it is much less frequent, although cases have been observed as late as 60 or even 70 years of age. Formerly it was often said that young children were never attacked, but Strumpell truthfully remarks: "This was because the disease was not recognized, for in reality it is only children under 1 year who seem to be seldom infected." When we recall that children under 1 year rarely drink water, their food being so largely fluid and being almost uniformly sterilized, we can readily understand why they should escape, and yet we may well question whether there is any special immunity against the danger of the Eberth bacillus in children under 1 year, the same as against most other infectious germs. Osler says upon this point: "It is not very infrequent in childhood but infants are rarely attacked." Murchison has seen a case at the sixth month. Cases have been observed which were congenital in which the mother had the disease late in pregnancy.

It has been my good or ill fortune to see during the past ten years in consultation, a number of children under the age of 2 years which presented mild intestinal disturbance, no marked tenderness over the bowels, a very high temperature, and where the apparent cerebral complications, delirium and stupor being prominent symptoms, were the apparent cause of death. In these cases in the death certificate the cause of death was usually given as congestive fever or meningitis. Two of these cases occurring within the past year, in both of which *post-mortem* examination revealed a pronounced error of diagnosis, has emphasized in my mind the thought that typhoid fever exists more frequently in early child life and in a serious form, than is generally suspected. It has generally been supposed that typhoid fever is milder when found among children than among the adolescent. Certainly, it has been noticed that intestinal complications and the characteristic ulcers are much less frequent, and as Strumpell says, this explains why "intestinal hemorrhage and peritonitis are much rarer in children," but he truly observes, "severe cerebral symptoms are on the other hand very frequent."

As we know, the laity have long been disposed to apply the term "nervous fever" to this disease, and the term is truly justifiable, because we know how frequent and severe the nervous derangements are which occur in typhoid fever. Indeed, in the adult one often finds apparently mild cases where the temperature ranges low and yet where the nervous phenomena are very pronounced. Considering the undeveloped, sensitive nervous organization of the child, we have good reason to look for even more pronounced and serious nervous manifestations than in those older.

I present the following case:

A little girl of 18 months, child of a very prominent physician, was taken sick early in May with marked intestinal disturbance. The evacuations from the bowels were frequent and copious, accompanied by mucus and blood. The temperature ranged from 102 to 104 and on one occasion reached 105 degrees. There seemed to be a history of acute indigestion. The usual treatment was applied in this direction and the temperature was controlled by cooling baths. Flushing of the colon with medicated warm water was applied, followed by starch-water injections containing a few drops of laudanum for the purpose of calming the bowel and reducing the frequency of the operations which interfered with rest. During the early part of the attack, the child though having frequent operations, was noticed to be calm and gave no evidence of pain. Not until the fourth or fifth day, however, was marked mental obtundity observed, and the staring appearance of the eyes, together with the indifference to surroundings, impressed me with the fact that there was a cerebral complication. The course of treatment was continued and the supposed cerebral complication became more pronounced. Inability to distinguish light or sound and later a crossing of the eyes, apparently justifying a diagnosis of meningitis. The child died about the tenth day. *Post-mortem* examination developed the absence of meningeal inflammation and the presence of ulcerations of the glands of Peyer, showing us, the physicians in attendance, how little we knew of the cause of death.

The indications for treatment were the same. A recognition of the disease in advance would have probably made no difference, for the holding of the temperature down within safe range, the giving of a bland diet, the securing of rest, the administration of antiseptic remedies to relieve intestinal irritation would have been the indications no matter what the diagnosis. The one case was almost a duplicate of the other, and both have emphasized in my mind, together with other experiences, the thought that we must admit the possibilities of typhoid fever during infantile life even more frequently than we have been in the habit of doing, and that we must be on the alert in this direction in order that we may make a correct diagnosis.

When we recall the fact that the serious disturbance of the nervous centers, producing coma and eventually paralysis in infectious diseases, (whether due to the Klebs bacillus, the bacillus of Eberth, the pneumococcus or Fehleisen's bacillus of erysipelas)

are due to the toxin secreted by the bacilli (and the nervous phenomena in all these diseases are often very pronounced) we can readily appreciate that the child who is so prone to the hybrid and indefinite expression of disease, should often be listed for meningitis instead of typhoid fever.

Infectious cerebro-spinal meningitis is often accompanied by a rash similar to that of typhoid fever, and we can readily see how easy it is to make an error in diagnosis in this direction.

This short paper may be condensed into the following conclusions:

1. Typhoid fever occurs more frequently in children than is generally supposed.

2. The fact that ulceration and hemorrhage is much less frequent would explain the absence of pronounced abdominal symptoms.

3. The erratic, undeveloped and hyper-sensitive nerve centers in early child life explain why the toxic secretions of the Eberth bacillus should make cerebral symptoms very pronounced.

4. Given a child of any age with or without intestinal disturbance, with a continued elevated temperature, with or without marked evidence of cerebral disturbance, the possibility of the presence of the Eberth bacillus of typhoid fever should be constantly kept in mind.

FURTHER REPORTS ON THE ABORTION OF TYPHOID FEVER.

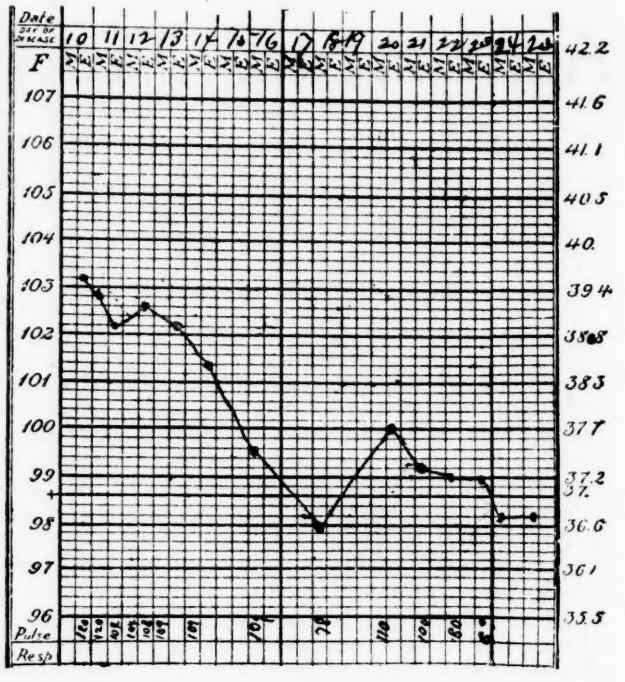
Read before the Mississippi Valley Medical Association at Hot Springs, Ark., Nov. 21, 1894.

BY JOHN ELIOT WOODBRIDGE, M.D.
YOUNGSTOWN, OHIO.

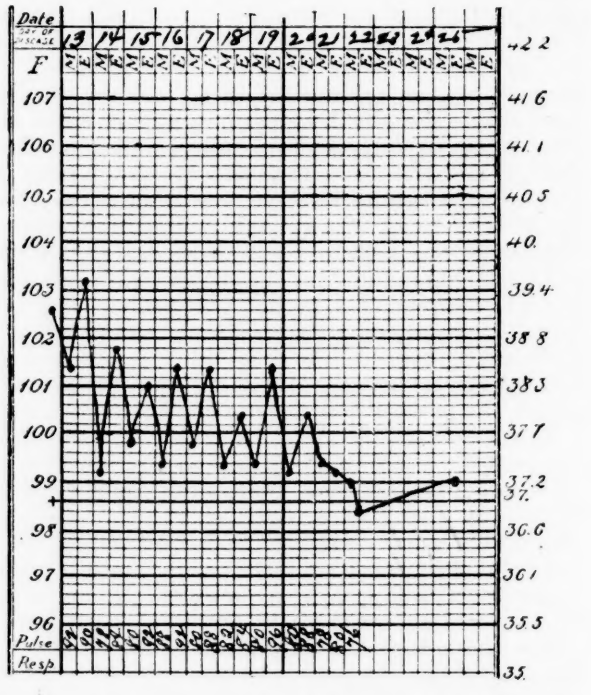
When I accepted an invitation to present a paper at your last meeting, selected for my subject the question, Can typhoid fever be aborted, and answered it in the affirmative, antagonizing the teachings of the most learned professors in every medical college in the civilized world, I knew that I should be severely criticized, no matter how conclusive the evidence might be that my views were correct, and I fully realized, to use the words of a distinguished *litterateur*, that I might expect to stand but sit and sleep on pin points for some years.

Nothing, save the feeling of responsibility for every life sacrificed to typhoid fever, and the positive knowledge of its correctness could have forced from me that affirmative answer; looking back over twelve years experience without a death from typhoid, malarial, or any continued fever, to a preceding series of sixteen years with a death rate of 17 per cent. from typhoid fever alone; and from a time when my brother practitioners were having no better results than I formerly had. On July 17, 1893, I gave in my local society the names and residences of twenty-one cases of typhoid fever out of the large number I had treated. June 25, 1893, I instituted a series of clinical charts and began numbering with 20, presenting at your last meeting twenty charts, to show the modification of the temperature curve by treatment.

I deem it my duty as a conscientious physician, desiring only the welfare of mankind and the advancement of my profession, to continue the reports of cases falling under my observation. The many grateful letters and kindly words of encouragement I have received from brother physicians, and in some cases from the patients themselves, more than offset the intolerant words and unkindly criticism I have met with from others.



Case 78.—Typhoid fever; name, J. J., age 6 years; residence, Darrow Street; date of admission, July 26, 1894. Result, temperature touched normal on the ninth day.

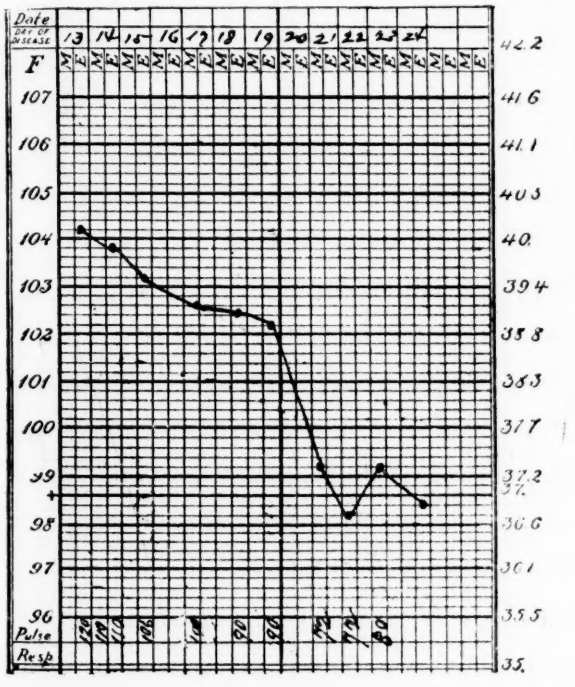


Case 82.—Typhoid fever; name, Ezra Main; age 26; nativity, American; occupation, farmer; residence, Trumbull County; date of admission, August 31, 1894. Commenced treatment August 30, one day before removing to the hospital. This patient was diagnosed as typhoid fever and treated a few days by Dr. T. H. Stewart of Church Hill. The symptoms becoming grave he feared to continue without a trained nurse, an expense which the family could not afford; hence he was turned over to me on the twelfth day of his sickness and moved nine miles in an ambulance to the Youngstown City Hosptal. August 31. Bowels very tympanitic; tenderness in right iliac region; rose spots abundant; tongue coated, margin red.

I have no feeling of unkindness for those persons, because I know that truth being eternal will prevail, and that my critics of to-day, should we all live, will

themselves practice the antiseptic abortive treatment in time, and thus vindicate the position which I have been obliged to assume as a logical sequence of the facts I have observed.

I hope, however, that by going annually before some great medical body, reporting the cases in which the fever was aborted during the intervening periods and exhibiting the clinical charts, and premising that I see the cases at a reasonably early stage of the disease with no death to mar the record, that I may ultimately prove beyond the possibility of a doubt that I am not teaching the world to expect or demand more of my profession than it ought. Few can realize the anxiety with which one stands before a representative body like this to say that the greatest thinkers, that all of the great teachers in this most learned of the professions, the highest aim of which is to mitigate human suffering and to save human life, have promulgated an error which in the one disease under consideration costs more than 50,000



Case 85.—Typhoid fever; name, C. Smith; age 10 years; residence, Fosterville, Ohio; date of admission, Sept. 13, 1894. This boy lived in a neighborhood where there were several cases of typhoid fever. Was not confined to bed *all* of any day, but although presenting well marked symptoms of the disease rode several times on his pony to my office to see me. Temperature touched normal on the tenth day of treatment. September 13. Headache severe for several days past; epistaxis; bowels tender and tympanitic. September 17. Rode his pony to my office.

lives annually and unnumbered years of miserable sickness.

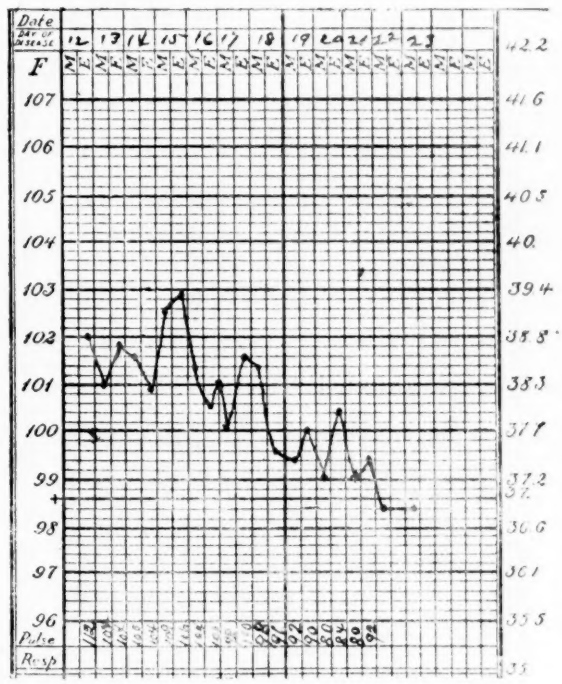
Since our last meeting, I have treated alone or in consultation, fifty-four cases o ftyphoid fever, without a death and with an average duration of treatment of about twelve days. I had, also, a case of pneumo-typhus and two or three cases sent by other physicians at late stages of the disease, one as late as the sixteenth day. I was called during the year to see one case on the thirty-fourth day of sickness when no treatment was needed and another at a somewhat earlier period but when the patient was dying of exhaustion and no treatment was possible. In the Section of General Medicine at the San Francisco meeting of the AMERICAN MEDICAL ASSOCIATION I reported my cases up to and including No. 75.

Case 76.—Pneumo-typhus; was in a desperate condition when I was called. She had been sick ten days; was coughing incessantly, raving wildly and having a profuse hemorrhage of the lungs; her pulse was 160; temperature 106.4. She was treated as a case of typhoid fever, with necessary additions in the later stages to meet the lung complication and made a good, though as you will see, not a rapid recovery. She lost all her hair.

Case 78.—John Joyce; was treated until the tenth day of sickness, by the family physician under a first diagnosis of malarial fever. Dr. Cunningham, who had seen some practice in Chicago accompanied me on my first visit having expressed a desire to see some of my work. I asked him to examine the patient and make a diagnosis. He did so, remarking that he should consider it a typical case of typhoid fever. Fearing that his words might frighten the boy's mother who was a stranger to me, I said: "Madame, you need not be alarmed; there is no danger from typhoid fever if it is properly treated." His temperature touched normal as you will see, on the eighth day of treatment.

Case 82.—Was sent to the hospital from the adjoining county of Trumbull, by Dr. T. H. Stewart. He was in the hospital ten days.

One of the best practitioners in Ohio made a diagnosis



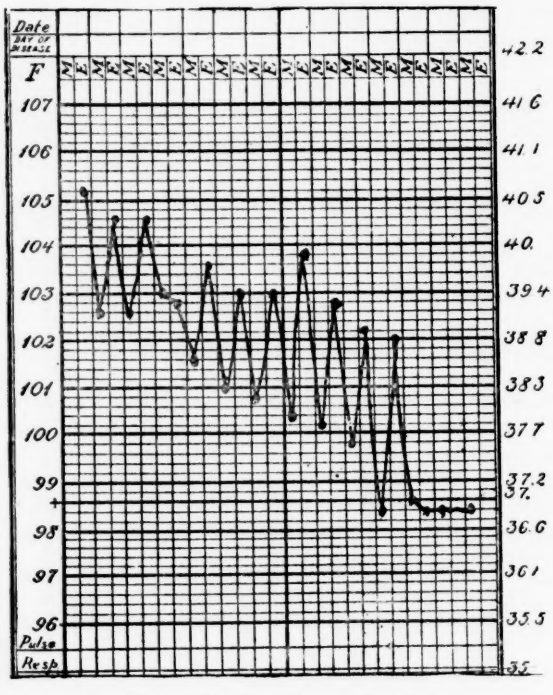
Case 86.—Name, N. H.; age, 17 years; residence, Pine Street; date of admission, Sept. 20, 1894. This patient was under the care of another physician who had prescribed corrosive sublimate and one of the coal tar derivatives; enjoined perfect rest, milk diet; made a prognosis of several weeks severe sickness. I was called on the twelfth day of sickness. Found a typical case of typhoid fever and gave a prognosis of no danger and ten or twelve days sickness. She sat up, having a normal temperature on the tenth day, but a few days later she developed a phlebitis from which she has hardly recovered. September 20. Rose spots abundant, other symptoms characteristic.

of typhoid fever and called me in consultation to Case 83 which made a good recovery.

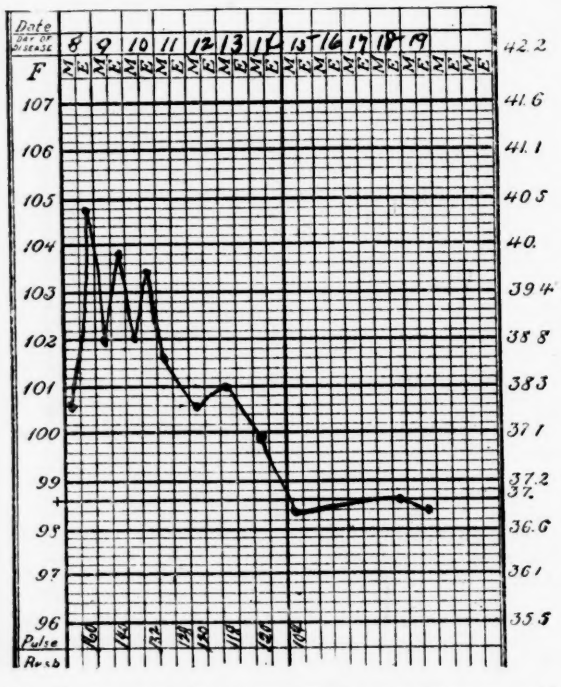
Case 86.—Was taken sick at the home of her parents, but her physician, recognizing the gravity of her condition had her removed to her sister's in a better and healthier locality, and had her put to bed down stairs, saying that she would be very sick for several weeks. He treated her until the twelfth day of sickness. I was subsequently called to attend this case and being unaware of the Doctor's prognosis, I told the family she would probably be much better in four or five days, and sitting up in ten days, which she did, but had an attack of phlebitis, which greatly prolonged the sickness.

The physician who called me in consultation to Case 83 was himself called in consultation to see Case 86, and after consulting, the two physicians went together to the family (in which there had already been three other cases and one death from intestinal hemorrhage) and told them that Mr. M.'s

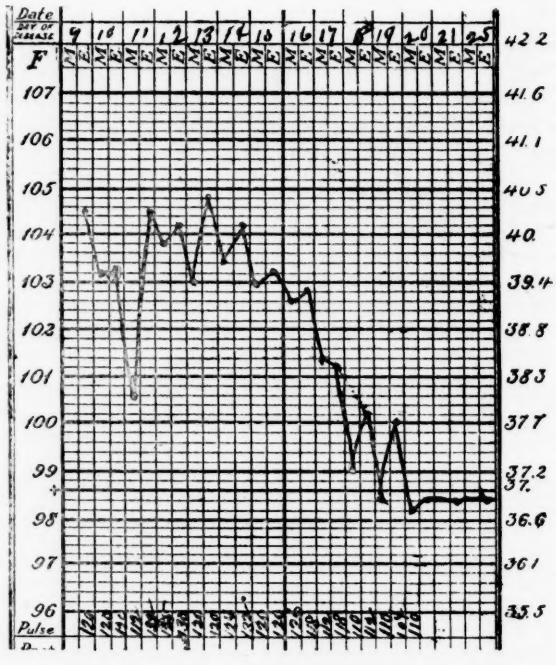
symptoms were all so very bad that they advised that Dr. Woodbridge be sent for in consultation. Upon consulting with the doctors, I said: "There is no danger of a fatal termination. He will have a normal temperature in ten or twelve days;" but added, "there is not only no danger of death in this case, but there never is any danger of death from typhoid fever when taken at the stage at which we take this case." Yet his pulse was 100, and his temperature was 105.2; his other symptoms were extremely grave, I was not expected to see him again. Prognosis verified by the result.



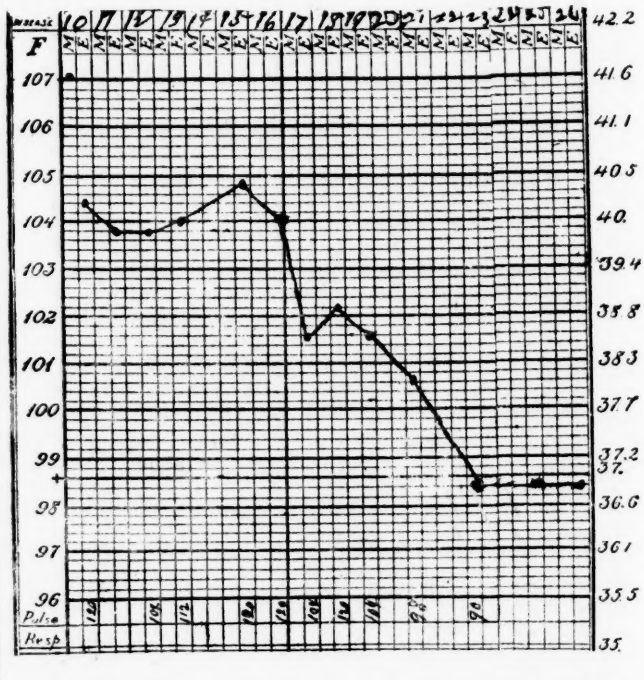
Case 87.—Typhoid fever; name, O. M.; residence, ————; date of admission, September 22, 1894. This patient was the fourth case of typhoid fever in the family, one having died after an intestinal hemorrhage. His nervous symptoms being very severe, his attending physician asked for counsel. After consultation with his other physician, he asked to have me called, expressing to the family the opinion that the man would die under any known treatment of typhoid fever. Temperature touched normal on the tenth day of treatment.



Case 89.—Pneumo-typhus; name, P. G.; age 4½ years; residence McGuffey Street; date of admission, Oct. 16, 1894. Temperature touched normal on the eighth day of treatment. On the beginning of treatment nose bleed; headache severe; bowels very tympanitic; slightly delirious. On the twelfth day of treatment rose spots abundant. On the eighteenth day of treatment playing out of doors but very irritable and cross.



Case 92.—Typhoid fever; Mrs. Yost; age, 24 years; residence, Hazelton, Ohio; date of admission, Oct. 27, 1894. Diagnosis by Drs. Bennett and Yost. Temperature touched normal on the tenth day of treatment. October 27. Bowels very tender and tympanitic; headache severe; nervous symptoms grave; sleepless; rose spots abundant. October 31. Pulse dicrotic. November 1. Pulse dicrotic.

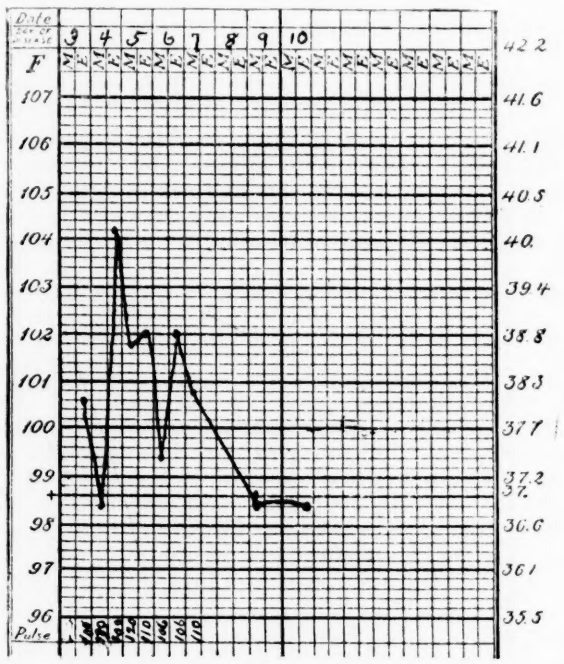


Case 93.—Typhoid fever; name, Mrs. ——; residence, Thorn Hill, Ohio; date of admission, Oct. 27, 1894. Sanitary surroundings terrible! No fire in house (kitchen separate). No change of bed or body linen. No attention to the ordinary demands of cleanliness. Husband taken from her bedside to jail. Temperature touched normal thirteenth day of treatment. When first seen, intense headache; no sleep for three or four nights; very nervous; abdomen tender and very tympanitic. October 15. Three hemorrhages of bowels.

Case 91.—Mrs. G., was seen in consultation with her attending physician. Her urine showed large quantities of albumen, and an abundance of both granular and hyaline casts. Her temperature never went above 101. She had considerable intestinal hemorrhage but made a good recovery.

Case 93.—When called in Case 93, I was told that she had been sick about ten days, but later information led me to believe that she had been sick twelve or thirteen days. Her condition, circumstances and surroundings were horrible; neither any part of her bedding nor her underwear were changed, nor were her face or hands or any part of her body washed during her sickness. There was a cooking stove in a back kitchen somewhere, and no fire anywhere else; it was cold weather with snow much of the time. The room adjoining hers, separated from it only by a loose board partition, was scrubbed once and when I went in the water was standing in puddles. On one of my visits I found the unemptied bed-pan on the bed, and on inquiring found her bowels had moved on the morning of the preceding day. Her husband was taken from her bedside to jail. She had three intestinal hemorrhages in one day. She made, as you see, a rapid recovery, her temperature becoming normal on the twelfth or thirteenth day. She lived so far in the country that I could not visit her every day.

Case 94, 92 and 96.—Dr. J. O. Yost, his wife and sister are interesting indeed. Mrs. Yost was under the care of Dr. B., a gentleman of unquestioned ability, who about a year ago passed through a very severe ordeal with typhoid fever, confined to bed six weeks, unable to attend to business an additional three months and even yet not over the effects of the attack. Seeing his patient growing worse, Dr. B. called on me about the tenth day and asked me to see her. I found as he said, a typical case of typhoid fever; the temperature 104½; the pulse varying between 110 and 134, which later became dicrotic. The bowels were very tender and tympanitic; marked dullness over the spleen; the margins of the tongue red, the center coated; much gurgling on pressure; a few rose spots which afterward became abundant; nervous and sleepless; very severe headache. A man boarding in a near by house dying, necropsy revealed extensive typhoid lesions and a perforation. The doctors asked if I considered Mrs. Yost in very great danger. I answered, giving my usual prognosis: "Typhoid fever is never dangerous if properly treated early." Two days later Dr. B. called my attention to Dr. Y., saying that he himself had typhoid fever. Examining him, I found his symptoms nearly as well marked as were those of Mrs. Yost, save that his temperature and pulse were not so high or frequent and he had no rose spots.



Case 96.—Typhoid fever; name, Kittie Yost; Hazelton, Ohio; date of admission, Nov. 5, 1894. Allowed solid food after the fifth day of treatment. Diagnosis made by Drs. Bennett and Yost. Nov. 5. Headache severe; cough incessant; abdomen tympanitic and tender, pressure produces gurgling.

He said if he were going to be confined to bed he should go home. I said: "Stay and attend to your practice. I assure you that you will be able to at least see patients in your office every day of your sickness," and he was.

Eight days later, Miss Yost was attacked with typhoid fever, not having said anything about being sick as long as she was able to sit up. Her temperature the day before I saw her was 104½; her pulse 100, and all her symptoms characteristic. I told the doctor that she would have to to stay in bed three or four days perhaps, but would be well in ten days, and could eat solid food all the time.

This closes the record since our last meeting. Some of the cases diagnosed and numbered as typhoid may possibly have been some other fever, but whatever they were, they all recovered under the treatment of typhoid fever; and this treatment is the least harmful they could possibly have had, there being nothing in it that could possibly be injurious except the little bit of calomel, and of that the dose is exceedingly small, less than one one-hundredth of the dose usually given.

No sane man would dare to go into houses with three or four members of a family sick with typhoid fever, the temperature of some of the patients above 105 degrees and give my invariable prognosis, unless he knew that there was power in medicine to ward off the threatened danger. No man would dare to make the promises I have made for so many years, unless he knew he could fulfill them. Remember, I have invited the closest scrutiny of my cases, and should I have a death from typhoid fever, or fail to abort a case when seen early, it would be emblazoned all over this broad land. But had I twenty years instead of twenty minutes, and could take you back and show you all the evidences that proved to me that typhoid fever can be aborted; could I show you all the typical cases that have yielded to this intestinal antisepsis; show the awful complications that threatened the life; show the white-haired old lady, with the positive proof of a preëxisting Bright's disease, with her repeated intestinal hemorrhages; show you the old man of 73 years, whose young son had succumbed to an intestinal hemorrhage; show the young lady with a year-old ovarian trouble presenting a rounded fluctuating mass through the abdominal walls; show you the wife of Angus McPhee with the blood welling up from her lung, and show you, too, that all of these patients recovered, many of them under the most adverse circumstances, totally disregarding all of the things usually insisted upon as essential to recovery. Many of them with only such nursing as a young child could give. Some giving no attention to restrictions as to diet, and all allowed to use their own pleasure as to exercise and bathing, and yet with no death to mar the record. You would commend my course in making so great a sacrifice and even endangering my professional career in the interest of humanity.

In the abortive treatment of typhoid fever, an early diagnosis is of the first importance. Every case of typhoid fever should be put upon proper treatment the first time seen. There should be absolutely no exception to this rule. If you await the development of pathognomonic symptoms of typhoid fever before beginning treatment, you will not always succeed in aborting the disease. Therefore a diagnosis from any other disease to typhoid fever is wholly unjustifiable, but the reverse is always proper, because the best possible treatment for typhoid fever is also

a safe initial treatment for any disease for which it could be mistaken.

If you always begin proper treatment when you first see your patient, he will be well often before a positive diagnosis is possible, and you will be deprived of what might otherwise have been a valuable record, but your patient will be the gainer. And after all we are physicians first and investigators afterwards. Hence, when consulted by a patient who could possibly become a victim of typhoid fever, diphtheria, la grippe, pneumonia or any pathologic condition which would be benefited by an intestinal or systemic antiseptic or eliminant, begin at once the treatment for typhoid fever.

It must not be supposed that because I have begun treatment at almost every stage of typhoid fever and have treated so large a number of cases and have had no death from typhoid fever or any disease that could be mistaken for it for more than twelve years, that such results are always possible. These cases make the proof positive that typhoid fever can be aborted, but it does not follow that it can always be aborted, or even that every life can be saved when it has not been properly treated in its earliest stages.

Next in importance to an early diagnosis, if indeed it should not stand *first*, is, that your prescriptions be properly compounded of pure and active ingredients. Messrs. Parke & Davis have for years supplied most of the materials entering into my prescriptions, and latterly they have put up for me, tablets of formulas Nos. 1 and 2, and soft capsules of formula No. 3 in a most satisfactory manner.

Begin the treatment with a tablet of formula No. 1:

R. Podophyllin . . . . . gr. 1-960.
Hydrarg chlor. m . . . . . gr. 1-16
Guaiacal carb . . . . . gr. 1-16.
Menthol . . . . . gr. 1-16
Eucalyptol . . . . . q.s.
Sig.: Every fifteen minutes.

No laxative effect should be produced during the first twenty-four hours, the object being to secure the antiseptic before the eliminative effect of the remedy. During the second period of twenty-four hours, not less than five or six free evacuations of the bowels should be secured. Then formula No. 2:

R. Podophyllin . . . . . gr. 1-960
Hydrarg. chlor. m . . . . . gr. 1-16
Guaiaicol carb . . . . . gr. 1-4
Menthol . . . . . gr. 1-16
Thymol . . . . . gr. 1-16
Eucalyptol . . . . . q.s.

R. Guaiacal carb . . . . . gr. iii
Thymol . . . . . gr. i
Menthol . . . . . gr. ss
Eucalyptol . . . . . m j

One or more tablets every hour or two should be given with No. 1 as frequently and in as large doses as possible without producing too much laxative effect, and as long as necessary if no symptoms of ptyalin (a wholly unnecessary complication), appear, in which event they must be discontinued promptly. for a day or two, and if necessary chlorate of soda or potash given, returning as soon as possible to formulas Nos 1 and 2. The object is to give these remedies as freely as possible at first, and then so gradually reduce the size and frequency of the doses as to allow the movements of the bowels to become less and less frequent, until, as the temperature approaches normal, the movements shall be reduced to one or two each day. About the fourth or fifth day of treatment begin No. 3 every three hours.

Every dose of medicine should be washed down with large draughts of distilled or sterilized water, or according to indications with some good laxative or diuretic mineral water.

This treatment begun early and intelligently carried out will, if the remedies are pure, active and properly prepared, abort typhoid fever and a death from the disease will be unknown.

ORIGINAL INVESTIGATIONS ON THE NATURAL HISTORY, (SYMPTOMS AND PATHOLOGY) OF YELLOW FEVER. 1854–1894.

BY JOSEPH JONES, M.D., LL.D.
NEW ORLEANS, LA.

(*Continued from page 948.*)

CHAPTER III.

CHANGES OF THE TEMPERATURE, PULSE AND RESPIRATION IN YELLOW FEVER.

Owing perhaps chiefly to the sudden origin, rapid progress, and singularly fatal nature of yellowfever, as well as the infrequency of the use of the thermometer in the investigation of the disease, but few facts of value relating to the definite degrees of temperature in the different stages of the disease can be found in the writings of various observers. Almost all observers, however, as Benjamin Rush,[15] J. Deveze,[16] Wm. Currie,[17] C. Caldwell,[18] Samuel Jackson,[19] P. Chas. A. Louis,[20] W. Arnold,[21] R. Jackson,[22] Lionel Chalmers,[23] John Lining,[24] A. M. F. Savarésy,[25] William T. Wragg, Daniel Blair,[26] John Davy,[27] Schmidtlein,[28] and many others, concur in the statement that in the early stage of reaction or febrile excitement the temperature is elevated to a greater or less degree, in different cases, above the standard of health; and still further, that this elevation of temperature is not permanent, but at the end of from two to five days, in most cases, is succeeded by a decided fall; and although the symptoms may be of the gravest character and the patient *in extremis*, neither the elevation of the temperature nor the frequency of the pulse give any true indication of the danger.

Dr. John Lining, of Charlestown, S. C., appears to have been the first physician who recorded definite observations on the variations of the temperature in yellow fever. In his description of the American yellow fever, contained in a letter addressed to Dr. Robert Whyte, Professor of Medicine in the University of

[15] Medical Inquiries and Observations (4 vols. octavo), Philadelphia, 1809.
[16] Recherches et Observations sur la Maladie Epidemique qui à régne à Philadelphia, en 1793; Dissertation sur le Fievre Jaune, Traité de la Fievre Jaune, etc.
[17] Treatise on the Synochus Icterodes, etc., 1794.
[18] Facts and Observations relative to Yellow Fever.
[19] An Account of the Yellow or Malignant Fever which appeared in the city of Philadelphia in the Summer and Autumn of 1820.
[20] Anatomic, Pathologic, and Therapeutic Researches in Yellow Fever of Gibralter, 1828; translation, Boston, 1839.
[21] A Practical Treatise on the Bilious Remittent Fever (Yellow Fever) etc., London, 1840.
[22] Treatise on the Fevers of Jamaica. London, 1791.
[23] Accounts of the Weather and Diseases of South Carolina. London, 1768.
[24] A Description of the American Yellow Fever, in a letter to Dr. Whytt.
[25] De la Fievre Jaune, etc. Naples, 1809.
[26] Some Account of the last Yellow Fever Epidemic of British Guiana. Third edition, London, 1852.
[27] Notes to Blair's Account of the last Yellow Fever Epidemic of British Guiana.
[28] On the Temperature in Diseases, by Dr. C. A. Wunderlich. (Sydenham Society, page 405.)

Edinburgh, dated Charlestown, Dec. 14, 1753, and published March 7, 1754, the following general observations relate to the changes of the pulse, respiration and temperature in this disease: "After a chilliness and horror with which the disease generally begins, a fever succeeded, in which the pulse was very frequent till near the termination of the fever, and was generally full, hard, and consequently strong; in some, it was small and hard, in others, soft and small; but in all these cases, it frequently varied in its fullness and hardness. Toward the termination of the fever, the pulse became smaller, harder and less frequent. In some, there was a remarkable throbbing in the hypochondria; in the latter of which it was sometimes so great that it caused a constant tremulous motion of the abdomen.

"The heat generally did not exceed 102 degrees Fah.; in some it was less; it varied frequently, and was commonly nearly equal in all parts, the heat about the precordia being seldom more intense than in the extremities, when they were kept covered. In the first day of the disease, some had frequent returns of a sense of chilliness, though there was not any abatement of their heat. In a few, there happened so great a remission of the heat for some hours, when at the same time the pulse was soft and less frequent, and the skin moist, that one from these circumstances might reasonably have hoped that the fever would only prove a remittent or intermittent. About the end of the second day, the heat began to abate. . . .

"The respiration was by no means frequent or difficult, but was soon accelerated by motion, or the fatigue of drinking a cup of any liquid. . . .

"A nausea, vomiting or frequent retching to vomit, especially after the exhibition of either medicines or food, came on generally the third day, as the fever began to lessen; or rather as the fullness of the pulse, heat and disposition to sweat began to abate. Some, indeed, but very few, on the first day had a vomiting either bilious or phlegmatic. . . . .

"The strength was greatly prostrated from the first attack. The pain in the head, loins, etc., of which they had complained before the attack, was greatly increased, and in some the pain in the forehead was very acute and darting; but these pains went off generally the second day. The face was flushed, and the eyes were hot, inflamed, and unable to bear much light. . . .

"The fever accompanied with these symptoms terminated on the third day, or generally in less than seventy-two hours from the first attack, not by any assimilation, or concoction and excretion of the morbid matter; for if by the latter, there would have been some critical discharge by sweat, urine, stool or otherwise, none of which happened; and if, by the former, nothing then would have remained but great debility. No; this fever did not terminate in either of these salutary ways, excepting in some, who were happy enough to have the disease conquered in the beginning by proper evacuations, and by keeping up a plentiful sweat, till the total solution of the fever by proper mild diaphoretics and diluents. But those who have not that good fortune, however tranquil things might appear at this period, (as great debility and a little yellowness in the whites of the eyes seemed to be the chief complaints, excepting when the vomiting continued), yet the face of affairs was soon changed; for this period was soon succeeded by the second *stadium*,—a state, though without any fever, much more terrible than the first; the symptoms in which were the following:

"The pulse immediately after the recess of the fever, was very little more frequent than in health, but hard and small. However, though it continued small, it becomes soon afterward slower and very soft; and this softness of the pulse remained as long as the pulse could be felt. In many, in this stage of the disease, the pulse gradually subsided, until it became scarce perceptible; and this notwithstanding, all the means used to support and fill it; and when this was the case, the icteritions—like suffusion, the vomiting, delirium, restlessness, etc., increased to a great degree. In some, the pulse often being exceedingly small and scarce perceptible, recovered considerably its fullness; but that favorable appearance was generally of but short continuance.

"The heat did not exceed the natural animal heat; and when the pulse subsided, the skin became cold and the face, breast and extremities acquired somewhat of a livid color. . . . The respiration was natural or rather slow. . . . The vomiting or retching to vomit increased, and in some was so constant that neither medicines nor ailments of any kind were retained. Some vomited blood; others only what was last exhibited, mixed with phlegm; and others again have what is called the black vomit. The retching to vomit continued a longer or shorter time according to the state of the pulse; for as that became fuller, and the heat greater, the retching to vomit abated, and *é contra*. . . .

"The debility was so great that if the patient was raised erect in the bed, or in some, if the head was only raised from the pillow, while a cup of drink was given, the pulse sank immediately and became sometimes so small that it could scarcely be felt; at this time they become cold, as in a horripilation, but without the anemic-like skin; their skin became clammy, the delirium increased, their lips and skin especially about the neck, face and extremities, together with their nails, acquired a livid color. . . .

"There were many small spots, not raised above the skin, which appeared very thick on the breast and neck; but less so on the extremities, and were of a scarlet, purple or livid color. In women the menstrua flowed, and sometimes excessively, though not at their regular periods.

"There was such a putrid dissolution of the blood in this *stadium* of the disease, that, besides the vomiting of blood formerly mentioned, and the bloody urine soon to be taken notice of, there were hemorrhages from the nose, mouth, ears, eyes, and from the parts blistered with catharides. Nay, in the year 1739, or 1745, there were one or two instances of a hemorrhage from the skin, without any apparent puncture or loss of any part of the scarf-skin.

When this *stadium* of the disease terminated in health, it was by a recess or abatement of the vomitings, hemorrhages, delirium, inquietude, jactatations, and icteritous-like suffusion of the skin, and white of the eyes; while at the same time, the pulse became fuller and the patient gained strength, which after this disease was very slowly. But when it terminated in death, these symptoms not only continued, but sooner or later increased in violence, and were succeeded with the following, which may be termed the third *stadium* of the disease, which quickly ended in death.

"The pulse though soft became exceedingly small and unequal; the extremities grew cold, clammy, and livid; the face and lips in some were flushed; in others, they were of a livid color; the livid specks increased so fast that in some the whole breast and neck appeared livid; the heart palpitated strongly; the heat about the precordia increased most; the respiration became difficult, with frequent sighing; the patient now became anxious and extremely restless; the sweat flowed from the face, neck and breast; blood flowed from the mouth or nose or ears, and in some, from all these parts at once; the deglutition became difficult; the hiccoughs and subsultus of the tendons came on and were frequent; the patients trifled with their fingers, and picked the nap of the bedclothes; they grew comatose, or were constantly delirious. In this terrible state, some continued eight, ten or twelve hours before they died, even after they had been so long speechless, and without any perceptible pulsation of the arteries in the wrists; whereas, in all other acute diseases, after the pulse in the wrist ceases, death follows immediately. When the disease was very acute, violent convulsions seized the unhappy patient, and quickly brought this *stadium* to its fatal end. After death, the livid blotches increased fast, especially about the face, breast and neck, and the putrefaction began early, or rather increased very quickly.

"This was the progress of this terrible disease through its several *stadia*. But in hot weather, and when the symptoms in the first stage were very violent, it passed through these stages, as Dr. Warren has likewise observed, with such precipitation that there was but little opportunity of distinguishing its different *stadia;* the whole tragedy having been finished in less than forty-eight hours."

Dr. Lining also records observations on the changes of the tongue, skin and urine which have been omitted from the preceding quotation, in order to present in a connected manner his accurate accounts of the changes of the pulse, capillary circulation, blood, respiration and temperature.

In his prognostics, Dr. Lining held that a sediment in the urine in the first and second day of the disease is bad, and the more copious the sediment is, the greater is the danger; bloody urine and all hemorrhages, excepting slight ones from the nose are bad; and the more copious they are, the greater is the danger; a suppression of urine, especially in those who in the course of the disease have had large discharges that way, is a certain sign of the quick approach of death.

Dr. Lining held that the yellow fever of America was a pestilential, specific contagious fever, imported from the West Indies, "which continues two or three days and terminates without any critical discharge by sweat, urine, stool, etc., leaving the patient excessively weak, with a small pulse, easily depressible by very little motion, or by the erect posture; and which is soon succeeded with an icteritous color in the white of the eyes and the skin, vomiting, hemorrhages, etc., and these without being accompanied with any degree of a febrile pulse and heat."

Subsequent observations have tended to confirm the accuracy of Dr. John Lining's comprehensive description; and the voluminous writings of Dr. Benjamin Rush, of Philadelphia, Drs. Samuel Latham Mitchell, and Edward Miller, of New York, and others a century later added literally nothing to the fullness of his description; but on the contrary these writers, and especially Benjamin Rush, caused much subsequent confusion by confounding the endemic malarial, paroxysmal fevers of the paludal regions of North America with the specific yellow fever of the West Indies.

Savarésy[29] who observed yellow fever in Martinique in 1803 and 1804, affirmed that the heat rises often as high as 38 or 40 degrees of Reaumur—equal to 117.00 or 102.2 Fahrenheit.

Dr. John Davy[30] published in 1814 the first of his remarkable papers containing the results of his experiments in animal heat; and in 1816 he began his observations upon the temperature of man in various climates, in various diseases and under various states of rest and exercise, fasting and repletion in various races;[31] and in 1828 he established the singular fact that the human body may manifest a high degree of heat after death.

The following are the cases as reported by Dr. John Davy:

Case 1.—Aged 23 years; was admitted into hospital on July 30, 1828, laboring under symptoms (as it was supposed) of acute rheumatism, having some pain first in one shoulder, then in the other, followed by pain in the hips, attended with much pyrexia, and a very rapid pulse. He died on August 6, a few minutes after 7 A.M. As the weather at the time was very hot (Military Hospital in Valetta, Island of Malta), and dead animal matter putrefied rapidly, it was necessary to inspect the body as soon as possible. Accordingly, it was examined three hours and a half after death; when the temperature of the air of the room was 86 degrees. The appearances most remarkable, discovered on dissection, were extensive collections of matter in the right shoulder, among the muscles on each side of the spine of the scapula, with sinuses extending to the axilla, and around the capsule of the shoulder joint; and a lesion of the same kind, and as extensive, in the left hip close to the head of the femur, spreading through the glutei muscles; and marks of incipient inflammation (as ecchymosis) on the right hip. The viscera were apparently sound. The right cavities of the heart and the great vessels were distended with liquid blood. The body was slender but not emaciated. Its surface was warm; the deeply seated parts felt very hot, imparting a disagreeable sensation, almost like that of burning, to the hand in contact with them. The thorax was first opened and afterwards the abdomen. After partial exposure of the surface of the contents of these cavities to the air for about ten minutes, a thermometer was procured. Placed under the left ventricle of the heart it rose to 113 degrees, and under the liver, in contact with the lobulus spigelii, to 112 degrees.

Case 2.—Aged 27 years, a stout, robust man, died suddenly in barracks, on August 6, at about 1:30 A.M. The body was examined at 5 P.M. There was a good deal of reddish fluid in the ventricles, and at the base of the brain. The lungs were distended with black liquid blood, some of which had passed into the bronchii. There was very little blood in the cavities of the heart. The temperature of the air of the room was 86 degrees. As soon as the cavities of the thorax and abdomen were opened, the bulb of a thermometer was in succession placed under the left ventricle of the heart, and under the lobulus spigelii of the liver; in the former situation it rose to 108 degrees; in the latter to 107 degrees. Almost a quarter of an hour afterwards, introduced into the substance of the right lung, gorged with extravasated blood, it was 105 degrees.

The question will naturally be asked, Was the extraordinary temperature, in one case of 113 degrees, and in the other of 108 degrees, generated during life or after death? Dr. Varez had little hesitation in coming to the conclusion that it was generated before death, and generated probably in the same

[29] De la Fievre Jaune en générale, et particulierement de celle qui a régne a la Martinique en l' an xi et xii 1803, 1804, 8vo. Naples, 1809.

[30] Philosophical Transactions of the Royal Society of London 1814. p. 590. Researches, Physiological and Anatomical, by John Davy, M.D. and R.S. Assistant Inspector of Army Hospitals, 1839. vi, pp. 141 248.

[31] Third Ed. Philadelphia, 1826, Res., Phys. and Anat., vi., p. 161.

way as the ordinary degree of animal heat experienced in health, or the extraordinary degree witnessed in febrile diseases. *A priori*, the effort of the heat-generating process, whatever it may be, can hardly be limited. In many birds, it raises the temperature of the body to 109 degrees, when in perfect health, and in man to 101 degrees, at least in the tropics, without deranging health; and it is easy to conceive that by increased activity or energy, it may exalt the temperature to the common febrile height, or to a height greatly exceeding that. But, destitute of life, in the opinion of Dr. Varez, there does not appear to be in the body any source of heat, any power of generating it, that is known. Putrefaction had not taken place in these bodies; even if it had, and had made progress, and were it even at its greatest height of activity, it is doubtful if it would be equal to the production of the effect in question.

It is a matter of regret that the temperature of the preceding cases was not ascertained by Dr. Davy before as well as after death; it is only known that the skin of the first case the day before he died was pungently hot.

These observations by Dr. Davy were of great value, in that they should have put medical inquirers on their guard as to the extreme limits of the degree of animal temperature, and especially of the blood in deep-seated parts. If the temperature of the body be 113 degrees, three hours after death, and if generated during life, before death it must have been still higher. Similar investigations were instituted by Dr. Bennet Dowler fifteen years later, in 1843, 1844, 1858, on the *post-mortem* heat of yellow fever and other diseases, the results of which will be fully examined in a subsequent part of the present discussion.

Subsequently, Dr. John Davy[32] made observations on the pulse and temperature in yellow fever, during his service in the West Indies. Thus in his notes to the work of Dr. Daniel Blair, on the yellow fever which prevailed in British Guiana from 1837 to 1842, Dr. Davy states that, "unusual slowness of pulse was very often observed in the yellow fever of Barbadoes, and commonly accompanied with undue coolness of skin, especially in the extremities; it was a very remarkable feature of the disease after its first invasion—the time varying in different cases. . . . . From the few observations which were made with the thermometer, on the temperature of men laboring under yellow fever in Barbadoes during the last epidemic, it did not appear to be high—when highest not exceeding 104 degrees Fah. in the axilla. In two instances trial was made of the temperature after death (four hours); on one (Fitzpatrick), that of the brain was found to be 98 degrees, of the lungs 100 degrees, of the heart 101 degrees (left ventricle), 100 degrees (right ventricle); in the other (Reynolds), that of the brain was 98 degrees, that of the lungs 102 degrees, of the heart 104 degrees (left ventricle); 103 degrees (right); of the liver 103 degrees. For the latter observations Dr. Davy was indebted to his friend, Staff-Surgeon Dr. Spence, who in the capacity of principal medical officer of the garrison of St. Ann, had ample opportunities to study the disease, of which, until attacked by it, he zealously availed himself.

Dr. Arnold,[33] in his "Practical Treatise on the Bilious Remittent Fever" (yellow fever), devotes an entire section of his work (occupying 66 pages out of 320), to the illustration by tables and cases of the temperature of the system in the febrile diseases of Jamaica, and states in his preface that he considers the temperature of the system in febrile diseases to be one of the most formidable symptoms; and expressed the belief that the system when laboring under bilious remittent fever (yellow fever), "must inevitably give way to the cause which produces even a few degrees of thermal exaltation beyond 105 degrees of Fahrenheit's scale, and that all our remedies will have little effect if we find it 110 degrees during the first or second stages."

The observations of Dr. Arnold were begun in 1819, and continued for twenty-five years, and he prefaces his observations on the changes of temperature in yellow fever, remittent fever, intermittent fever and typhoid fever, by the results of his investigations on the normal temperature of 107 subjects of all denominations, ages and sexes, including Creoles, black laborers, domestics, carpenters, mulattoes, white natives and Europeans; and the mean of that whole series was 98.19 degrees F., which Dr. Arnold considered a correct estimate of the temperature of the system in health in a climate like that of Jamaica. Dr. Arnold says: "*I believe there is no study more calculated to improve the healing art, or to throw more light on the nature of febrile diseases, than a minute attention to the state of the temperature of the system.*" . .

I shall next point out the deviations which occur in consequence of febrile or preternatural heat, by a series of cases and observations, for the purposes contemplated in the inquiry, and I think it will be seen that the system is not capable of having any great augmentation of heat from morbid causes, without incurring serious, and sometimes irreparable mischief. In fever, particularly of the remittent form, the whole power of the animal economy is deranged—all its healthy functions are suspended; digestion is only imperfectly performed; the mental energy is much weakened by the agent which causes the fever, the ardent heat and rapid circulation; the heart is laboring and appealing for relief; the whole system is screwed up, as it were, to its highest pitch of excitement. *The heat, at this time, is at its utmost limit, and if continued for many hours, the extinction of life* would in all probability result, in consequence of various changes or decompositions taking place in the blood. The exact degree of heat which is necessary to achieve this end has hitherto not been very accurately ascertained; it will require much diligent investigation to settle the point. The ingenious Dr. Hales believed "the heat of the blood in high fever to be 136 degrees." This is irreconcilable to anything I have witnessed during twenty-five years' practice. Boerhaave also made various experiments, and he seems to think that "*terribly mischievous work might be effected by a degree of heat above 106 degrees, for, as he asserts, the serum of the blood would be coagulated.*" And he further asserts *that the natural heat of the blood of a human creature approaches very nearly the degree of coagulation.* Hippocrates, 4 de Morb., 23, observes: "Such a degree of heat, if neglected or wrongly managed, may indeed dissipate the more thin and watery parts, and so gradually thicken the

[32] Some Account of the last Yellow Fever Epidemic of British Guiana. By Daniel Blair, M.D., Surgeon-General of British Guiana. Edited by John Davy, M.D., F.R.S., etc. London, 1852, pp. 77, 78.

[33] A Practical Treatise on the Bilious Remittent Fever; its Causes and Effects. With Illustrative Tables and Cases on the Temperature of the System in the Febrile Diseases of Jamaica, etc. By W. Arnold, M.D., etc. London, 1840.

whole mass of blood; have bad enough effects that way, if it do not bring on a putredenous thinness." This was evidently but supposition; the serum of the blood or the white of an egg, requires a degree of heat to coagulate, which no living animal can bear, notwithstanding the puzzling tricks of fire-eaters and such mountebank impostors, who thrust themselves into ovens heated sufficient to bake a leg of mutton. Water at 108 degrees is too hot for the hands for any length of time; yet there are some persons, from custom, who can handle very hot pieces of iron; but such instances are only sufficient to form an exception to the rule and require no further comment."

Dr. Arnold records several fatal cases in which the temperature ranged from 108 to 110 degrees in the axilla. In three cases of yellow fever recorded by this physician, the temperature reached 110 degrees, and a similar degree of heat was observed in several cases during life by Dr. Bennet Dowler in 1843, 1844 and subsequently. In 1843 he began a remarkable series of investigations on the temperature of the heart and axilla during the various stages of yellow fever, and of the different organs after death. His original paper was first transmitted to, but not published in full in the *Western Journal of Medicine and Surgery* during the winter of 1843–44. Dr. Dowler continued his observations on the temperature in yellow fever and other diseases during a period of sixteen years,[34] and he established the fact that the temperature of the internal organs may attain after death a degree of heat equal to that witnessed by Dr. John Davy in the Island of Malta in 1828, viz., 113 degrees. Dr. Dowler confirmed the accuracy of the statement of Dr. Arnold, of Jamaica, that the temperature of the axilla in yellow fever may reach 110 degrees F.; and he also demonstrated that patients may recover from yellow fever whose temperature in the axilla has reached 109 degrees.

Dr. Dowler also demonstrated that, as a general rule, the temperature in the early stages of yellow fever is higher in fatal cases than in those which recover. Thus, in one series of cases of yellow fever, taken without selection, the following results were obtained: Fifteen patients who recovered, whose temperatures were taken at a period which averaged fifteen and one-third hours after the invasion, and afforded a mean temperature for the hand of 101.8 degrees, and for the arm-pit 104.84 degrees; nine persons who died, gave an average of, twenty-two and one-third hours after the invasion, for the hand, 103.62; for the arm-pit, 105.44 degrees.

The maximum of these classes coincided, but not the minimum. In those who died the average was higher; in the hand, the maximum reached by both was 107 degrees; the minimum in the hand among those who recovered was 95 degrees, and of those who died 99 degrees; the maximum of the former, in the axilla, 107 degrees; of the latter, 109 degrees; the minimum of the former, in the same region, 102 degrees, and of the latter 100 degrees, the latter being in *articulo mortis*.

Full justice will be done to the labors of Dr. Bennet Dowler in that portion of this chapter which relates to *post-mortem* heat in yellow fever.

Dr. Daniel Blair,[35] in his last published report on the "First Eighteen Months of the Fourth Yellow Fever Epidemic of British Guiana," says: "High temperature of the body seems to have persisted longer through the stages of the disease in this epidemic than in the past. There is great irregularity in the temperature of the surface; sometimes the forehead is the hottest part of the body, and occasionally the chest. The uncovered portions of the body in the latter stages are easily reduced in temperature; and thus while the exposed chest and extremities may feel cool to the touch, the axilla may raise the thermometer to 102 or 103 degrees. The highest temperature I have observed during the course of the disease was 107 degrees Fah."

According to Dr. Wragg,[36] in some cases of yellow fever, the thermometer indicated a temperature of 108 degrees in the arm-pit, and 105 degrees on the chest.

Dr. Robert N. Lyons,[37] has recorded valuable observations on the relations of the pulse and temperature in the yellow fever which prevailed in Lisbon, Portugal, in 1857. Dr. Lyons arranges the cases under five groups, viz.: 1, the algid form; 2, the sthenic form; 3, the hemorrhagic form; 4, the purpuric form; 5, the typhus form.

(To be continued.)

NOTES ON THE MAIN CHANNEL OF THE SANITARY DISTRICT OF CHICAGO.

Read before the Civic Federation of Chicago.

BY J. W. BEARDSLEY, C. E. (CORNELL UNIVERSITY.)

It is impossible within the few minutes at my disposal to more than cursorily touch upon the following general points relative to the main channel of the Sanitary District of Chicago:

1. A general description of the present progress of the work.

2. Some of the benefits accruing to the residents of Chicago upon the completion of the channel.

3. Points of interest in a tour of the line.

Of the well-known facts regarding the origin of the project, the labor involved in its legal birth and the imperative demands of sanitation for immediate relief, I will say nothing. The existing result is a channel under process of construction and about thirty miles long. The eastern terminus is at the intersection of Robey Street with the west branch of the south fork of the river, the grade of the bottom being about twenty-four and one-half feet below the Chicago datum plane, or the low water of Lake Michigan; thence it extends westerly, through the ancient water course of the Great Lakes to the Gulf, to the lower terminus at Lockport, where the bottom has an elevation of thirty feet below the Chicago datum plane.

The line is separated naturally into four divisions by the cross sections, and by the nature of the material to be excavated.

From the eastern terminus at Robey Street to the lower part of Section F, a distance of about nine miles, the material is of a nature to be readily excavated without interference to navigation or discharge whenever, in the future, sanitation demands a larger channel. Therefore, the area of the cross-section is a

[34] Experimental Researches into Animal Heat in the Living and in the Dead Body, by Bennet Dowler, M.D., of New Orleans. New Orleans Medical and Surgical Journal, Vol. xii, 1856, pp. 54, 205, 289, 433, 603, 759, 433, 470; Vol. xvii, 1860, pp. 199, 356.

[35] British and Foreign Medico-Chirurgical Review, April, 1856, Appendix, p. 6.

[36] Charleston Medical Journal and Review, 1855, Vol. x, p. 73.

[37] A treatise on fever or selections from a course of lectures on fever, being part of a course of theory and practice of medicine, delivered by Robert V. Lyons, K.C.C., etc. Am. Ed., 1861.

minimum being held to a bottom width of 110 feet. This section is designed to carry 300,000 cubic feet of water per minute. The average cutting is thirty-seven feet deep.

Near the lower end of Section F, the material becomes more difficult to excavate and is designed for the maximum discharge of 600,000 cubic feet per minute, a quantity sufficiently large to so dilute the sewage of 3,000,000 inhabitants that the effluent will be harmless for manufacturing purposes. Here the cross-section is expanded to 202 feet on the bottom with side slopes of 2 feet horizontal to 1 foot vertical. The maximum velocity is about twenty-one inches per second. The average cut is nearly thirty-six feet for the next five and one-half miles.

The third natural division beginning near Willow Springs, marks the appearance of rock, the glacial drift forming about two-thirds of the material to be excavated. The cut averages about thirty-seven feet. Here the cross-section is decreased to 160 feet at the bottom and 163 feet at the top of the channel giving, practically, vertical sides. Retaining walls, extending from the rock up to five feet above the datum plane, form the sides of the channel. This bottom width of 160 feet controls the remainder of the line. Here, also, the union between the bottom widths of 160 feet and 202 feet is made. The retaining walls extend out as wing walls, to the required form of the preceding section.

The grade has an increment corresponding to the decrease in area of the cross-section and still provides for the maximum discharge of 600,000 cubic feet per minute. This requires the velocity to be increased to thirty inches per second, or two miles per hour.

Near the eastern end of Section 7, begins the fourth natural division; the glacial drift practically disappears, forming only about 3 per cent. of the total excavation for the remaining nine miles. The average cutting through *solid rock* is about thirty-three feet. This unparalleled rock excavation has necessitated the use of channeling machines for cutting vertical sides, drills to prepare the rock for blasting, and various conveyors for removing the shattered rock after it has been loaded by hand into skiffs or buckets. The end of this division and the western terminus of the main channel—Section 15—is partly built up and partly excavated and marks the location of locks, when the channel is finally open to navigation; but for the present it will be the site of the controlling works, by which the discharge of the new channel into the Desplaines River may be regulated. These works must provide for the surface fluctuations in Lake Michigan, which would result in an extreme oscillation of about thirteen feet at the controlling works. The surface of the water at the controlling works is some ten feet above the surface of the Desplaines River, which makes a rapid descent for about four miles to Lake Joliet. It will require extreme care to safely dispose of this immense volume of water over such a declivity, and it also suggests the enormous energy which could there be developed, estimated by Mr. Cooley to be 55,000 horse power between Lockport and Joliet, and 45,000 between Joliet and La Salle. Such a power and such a water-way have caused in similarly located places, phenomenal growth, and may form a source of income to the sanitary district of no mean moment.

The expenditure of $3,000,000 (actually $2,606,227.92) for a right of way has received its share of criticism. It would be a paradox to find a charitable object or institution, a financial success. But measure, if you can, the development of the city along such an avenue of commerce, the value of adjoining lands, which the trustees with keen foresight have added to the assets of the sanitary district, wharf privileges and warehouse rentals, and show that within the lifetime of some of us this same right of way may not prove a magnificent investment for meeting bonded indebtedness, or, for the expenses of maintenance and development.

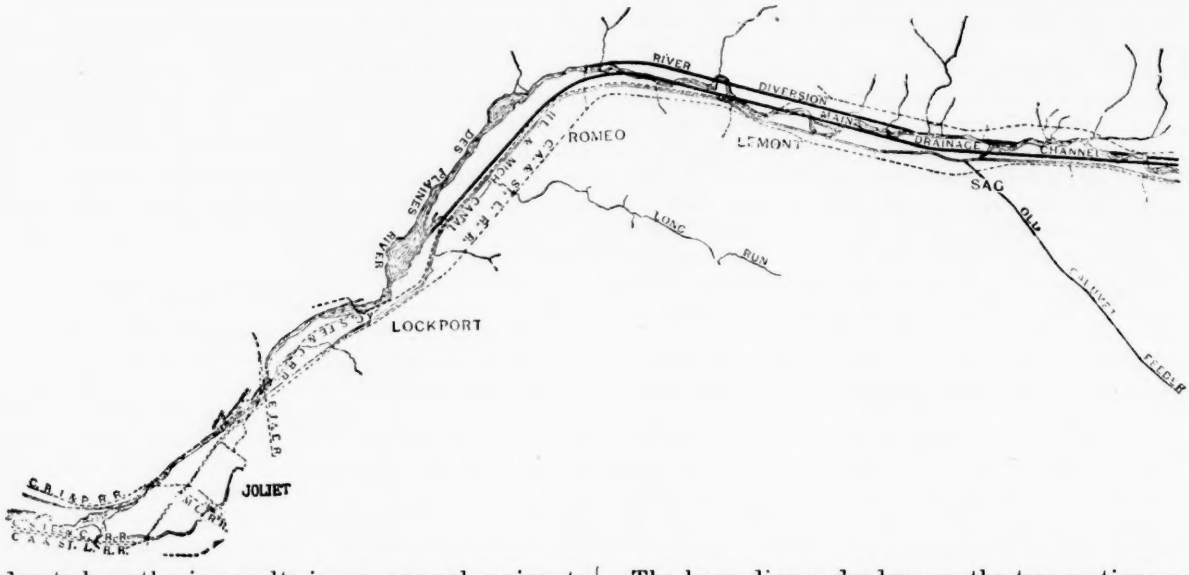
The estimated rock excavation on Sections 7 to 14, inclusive, gives a total of 8,189,152 cubic yards of rock in place. This will expand into 14,333,333 cubic yards of broken stone on the sanitary right of way, at the very edge of an extensive water course. This is an amount sufficient to build 3,257 miles of street, having a road bed 30 feet wide and using an average depth of 9 inches of broken stone. It would build 12,217 miles of country road 12 feet wide and with an average depth of 6 inches, thirty-one and one-half times the length of the State of Illinois, from Chicago to her antipodes; or, furnish the foundations, and it would give a path 2 feet wide and 2 inches deep from Chicago to her lunar neighbor.

Financially, it is more economic policy for the taxpayers of the sanitary district to place untainted and above suspicion, their magnificent source of potable water by one large outlay, than to keep themselves perpetually subject to expense in extending water supply tunnels and in the hopeless pumping of the Chicago River sewage into the Illinois and Michigan Canal, which stands a menace to health throughout its entire course, and of which it has been aptly said: "It is frequently worse but never better."

Sanitation is a measure of civilization. Advancement requires time. Public opinion is called safe because it is conservative; but it is dangerously conservative in lines of advanced sanitation.

It is not possible to give a money value to sorrow, to losses entailed by useless sickness and death, and to the increase of crime and pauperism always accompanying filth and squalor, or, to place a value upon increased longevity and good health—the working capital of both unskilled labor and of the leaders in thought and action. But let us attempt to find a money value for a disease typical of polluted water and inferior sewage disposal. From typhoid fever in the years 1890, 1891 and 1892, the State Board of Health reports an average of 1.18 deaths per 1000, and this dread disease has been almost an epidemic here during the past decade.

Of typhoid fever, twenty-eight English cities give an average decrease, brought about by sanitary measures, of 39 per cent. Likewise, Boston, Brooklyn and New York obtained a decrease of 41.5 per cent., and I believe that the workings of the main channel of the sanitary district will bring to Chicago the beneficial decrease of 50 per cent., but to be more conservative, place the decrease at 33⅓ per cent. Assume a population of 1,500,000 and a reduction of the death rates of 1890 to 1892 by 33⅓ per cent. and we have a saving of life from typhoid fever alone of 585 persons per year. Assume only one-fifth of these to be bread-winners, supporting the average family of five. The city would save on this basis the support of 117 such families or 468 such persons, costing not less than $150 a year for five years. This



moderate hypothesis results in an annual saving to the tax payers of $355,000. To this add a saving of $25 for each funeral involved, and the moderate fee of $10 for medical attendance for each of these 585 useless deaths; this gives the sum of $20,475. Assume ten cases of serious illness for each death, at an expense for medical attendance and enforced idleness of only $15. This adds to the sum $87,750. Thus the grand total saved per year by the reduction in typhoid fever alone is $463,225. This sum capitalized at 4 per cent. per annum gives $11,500,000, nearly one-half of the total expenditure of the sanitary district of Chicago.

The city of Chicago is located upon the bed of a comparatively recent swamp, and is specially subject to zymotic and enteric diseases, but her death rate *should be below* the normal on account of the continuous increment to her population of men, young, robust and ambitious.

The increased resistive powers of the system, the increase in capacity for thought and work, in morality and independence, resulting from the causes that decrease a death rate, can not be measured by sordid money values. But considered from the above standpoints, we can but feel and admire the wise and intense philanthropy which characterized so thoroughly the early promoters of the sanitary scheme. Aside from sanitation, the national importance for warlike maneuvers, and the international commercial importance of such a watercourse to Chicago can not be passed by. I quote from a brief by Mr. Cooley:

"Sitting at the pass of two continental valleys, a great waterway to the Atlantic, a great waterway to the Gulf, the center of a territory as resourceful as the world can show—her latent interest is awakening; she would restore the ancient outlet of the lakes; her thinking men are realizing that this old portage may become the Bosphorus of America, like the Constantinople of old, to possess which was to rule the world."

To the tourist the massive machinery, almost intelligent in its power, the proportions of the canal already excavated and the corresponding spoil banks attract, generally, the most attention, and are certainly worthy of more than a casual visit.

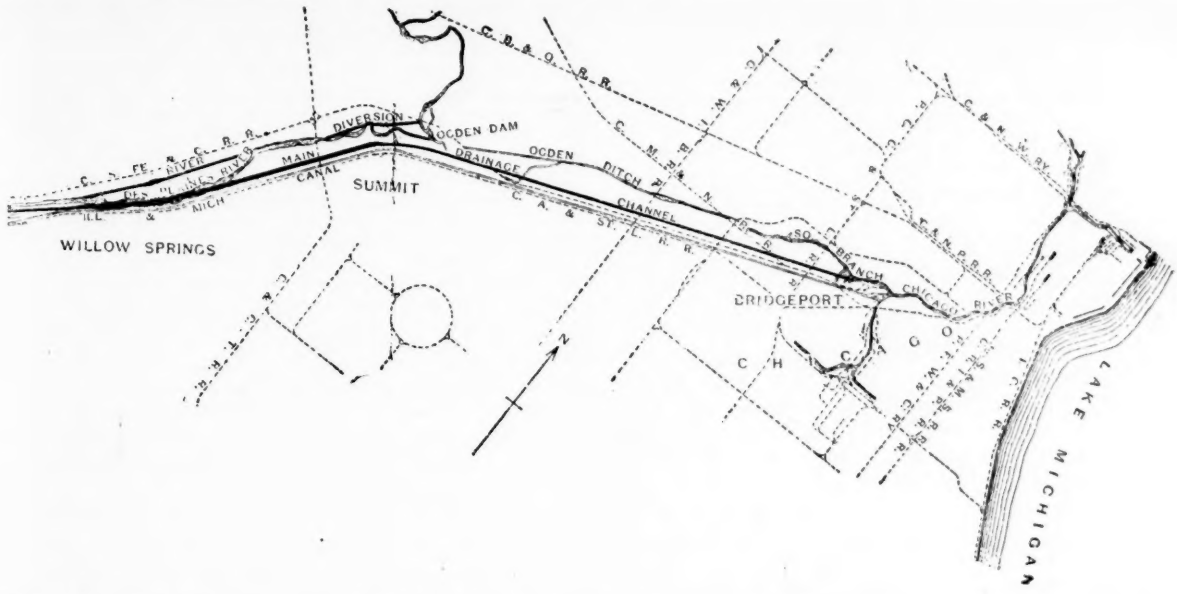
The huge dipper dredges on the two sections nearest the city, rapidly eat their own channel for floatation. West of these are the inclines, the bridges spanning the spoil banks, the belt conveyors and the cantilever conveyors operated in connection with steam shovels. All are movable parallel to the axis of the main channel, and are effective, ingenious and ponderous machines. Next are found the hydraulic dredges on Sections A and B, east of Willow Springs. Here the soft, low-lying ground is agitated beneath the water surface and, by means of powerful pumps, it is discharged from pipes at the desired distance from the channel. These sections will soon be unwatered, so that the hard underlying material may be excavated by steam shovels and other suitable machinery.

It is doubtful whether the men now engaged on the western portion will ever again see a rock cutting of such magnitude. Here are the cableways of 700 feet span, and the cantilevers which reach out 140 feet over the channel and 180 feet over the spoil bank.

The not uncommon occurrence of a rock blast shattering and hurling perhaps four thousand tons of rock, and consuming nearly a half ton of dynamite, is an impressive spectacle. To the geologist the present state of excavation affords an intensely interesting field. He has an unparalleled opportunity to study the varied constituents and complete sections of glacial drift as it was left in the remote times, cuting its striæ and furrows in the underlying rock, and he will perhaps find the cutting boulder still in its abruptly ended furrow. In the alluvial deposits, large antlers, Indian relics, buffalo and mastodon bones have been discovered.

The vertical cuttings through solid rock present vivid object lessons in stratification faults and fissures, and the fossil hunter will be amply rewarded by finding nearly all the fossils characteristic of the Niagara limestone.

When the channel is complete from the standpoint of the sanitary district, Chicago can successfully combat scourges and epidemics. The Chicago River will become an outlet and will gradually purify itself and become a part of the network of lagoons joining the lake and the main channel through the north and south forks.



Chicago is rapidly becoming the first city of the Occident. In present achievements she has surpassed the wildest predictions of her founders. But useless will be her command of commercial centers, of railways and water courses unless she listens to the too apparent warnings of her streets and rivers, provides for her millions those most lavish gifts of Nature—pure air and pure water—and the higher gifts of civilization, pure social, moral and civic conditions.

It behooves every patriotic citizen to be relentless and persistent in the instruction of the masses for the accomplishment of such ends; then will the city of Chicago stand majestically, the Queen of the Western World!

A SKIASCOPIC EYE.

BY JAMES THORINGTON, M.D.
PHILADELPHIA, PA.

The rapidly growing popularity of the shadow test as an accurate method of obtaining the exact refraction of an eye under the influence of a mydriatic, prompts the writer to present an inexpensive eye for the use of the student or oculist who may desire to learn skiascopy at his leisure.

The eye as here shown, reduced one-third in size, is made of two cylinders of cardboard, one slightly smaller than its fellow, to permit slipping evenly into the other. Both cylinders are well blackened inside. The smaller cylinder is closed at one end, and on its inner surface is placed a colored lithograph of the normal eye ground. The larger cylinder is also closed at one end, except for a central round opening, ten millimeters in diameter, which is occupied by a + 20 diopter lens; and on its outer surface is a colored lithograph of the normal eye with its appendages, the pupil being dilated, and corresponds to the central opening just referred to. In addition to this picture of the eye, there is also lithographed on the upper half of the periphery, the degree marks similar to those on a trial frame. To the lower half of the periphery are secured four pieces of cardboard, making two interspaces for trial lenses, and being square at the base, gives the eye an even resting surface.

On the side of the small cylinder is an index which records emmetropia, and the amount of myopia and hypermetropia according as it is pushed into or drawn out of the large cylinder. To use this eye, it is only necessary to bear in mind the two rules of skiascopy, governing the use of the plane mirror at the working distance of one meter, namely, that the light reflex seen in the center of the pupil moves,

1, with the movement of the light on the face in emmetropia, hypermetropia and in myopia, if the latter is less than one diopter; and 2, against (or opposite to) the movement of the light on the face in myopia of more than one diopter. If it is desired to study the band of light,[1] as seen in myopic or hypermetropic astigmatism, place the necessary cylinder from the trial set, in the back interspace, the degree marks assisting in finding the axis, and especially so if the axonometer is used.

This eye answers admirably for the beginner in ophthalmology, though not originally so intended, and as here illustrated and described, is made by Messrs. Queen & Co., of this city.

[1] Vide, Annals of Ophthalmology for January, 1895. "Thorington on Skiascopy."

THE SYSTEMIC FACTOR IN THE TREATMENT OF DENTAL CARIES.

Read in the Section on Dental and Oral Surgery at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY G. S. DEAN, M.D.

SAN FRANCISCO, CAL.

It is not only because of its novelty that I have chosen my subject. I have chosen it, also, because it seems eminently a proper subject for presentation on an occasion like the present—an occasion whereon the practitioner of general medicine and the practitioner of dental medicine sit down together, to consider what they may do, jointly, for the welfare of mankind. The time was, in the not-distant past, when these two practitioners were sadly ignorant of one another's territory. But now the two have come together. They have familiarized themselves with one another's country. And now that they meet as allies in the cause of humanity, now that they are inquiring what they can do jointly for that cause to which their lives are devoted, it seems eminently proper to bring forward for discussion a subject which lies within the territory of both. It seems fitting on this occasion, to bring forward for attention the systemic side of the treatment of the commonest of dental diseases—the commonest in fact, of all the physical ills with which mankind is afflicted. That there is frequently (not always) a systemic factor in the etiology of dental caries, and that systemic treatment is often needed for the cure of this local affection, I shall endeavor to show. This being shown, it will appear that the disease has an interest, a practical interest, for the general as well as for the special practitioner. Hence it has seemed to me that, apart from other reasons, the subject which I have chosen has a peculiar appropriateness to the present occasion.

Let me introduce the subject by presenting a case. Let me do this, not merely because it is the proper way to introduce a new subject, not only because at the outset a single clear concrete presentation is worth a world of misty generalities; but let me do it also as a protest against the opposite course too often adopted and even defended by the presenters of new subjects, who, thoughtlessly, not having taken due note of the need of the human mind for concrete centers of knowledge, burden us with vague abstract or general statements without driving the initial nails on which these statements should be hung. Case reports are usually considered little more than cumberers of the ground; to be avoided or eliminated, or employed only as idle gossip to fill waste space or kill waste time. But this estimation can be due only to non-appreciation of the nature and the necessary conditions of human knowledge. A report of a case may, certainly, be uninstructive; for it necessarily contains only what the reporter has seen, and he has perhaps not seen the items which are relevant. But for the presentation of new truth vividly, convincingly, for the purpose of rendering truth graspable or assimilable, there is nothing which can take the place of contact with the facts. With the assurance, then, that this method of presentation is right, and that the contrary method is wrong, I proceed to my narrative:

A gentleman sought dental examination, occasionally, during some years, his teeth being always found free from caries. At length, on the proximal faces of two of his teeth, cavities appeared.

Examination of the saliva revealed nothing worthy of note; no known form of salivary abnormality was present. We are not yet able to make satisfactory clinical salivary analyses. Inquiry developed the fact that, while the patient was "well," there was perhaps a trifling gastric and quite certainly a slight intestinal indigestion. Search for the cause of the disordered function, oral and intestinal, proved futile. Fillings were inserted; and there was given such hygienic attention, general and local, as seemed possible in the absence of etiologic insight.

About a year later, the filled teeth were found in good condition, but three other inter-dental spaces, in different parts of the mouth, were bordered by decay. At this time the general gastro-intestinal error, though not great, was sufficiently pronounced to be noticeable; and it was accompanied by rather frequent attacks of diarrhea, serous in character, sometimes supervening on exertion, at other times appearing without perceptible exciting cause. The patient, I thought, looked more pale and dull than before. He said that, though "well," he "felt somewhat run down."

Let me pause to set forth explicitly the salient general features of the case as they then appeared to me—there being no cognizable local abnormalities. Though there may have been periods of mucous inflammation, yet on the whole it may be said that whatever evil existed was beyond the reach of the dissecting knife; in other words, there was no apparent structural error; the troubles were purely functional. The failure of function was twofold, general and local; there was systemic atony or asthenia, and there was disorder of the intestinal tract; the digestive disorder being, I may add for explicitness, extended as distinguished from localized, and simple or apeptic as distinguished from complex or parapeptic. The relation between the local and the systemic derangement was beyond my view. I desired on this point (as I had done the year before) an expression of opinion from gentlemen more capable than myself of forming a judgment, but, failing to obtain it, remained in darkness. I probably accepted tacitly the hypothesis usual in such cases, namely, that the general asthenia was due to the digestive error.

The etiology of the predisposition to dental caries was, then, beyond my view. The dental disease seemed incapable of actual remedy, capable only of retardation by persistent or repeated local attention. The progress of the destruction of the teeth was again checked by filling the cavities, and the patient was brought to an active resolve to care locally for his own teeth (in the sense of keeping them clean) the moving cause being a realization by him of the fact that the predisponent of the dental caries was undiscoverable and therefore irremediable, and that therefore, to prevent destruction of the teeth, the effects of the predisposition must be met by local measures.

In a few weeks he re-appeared, complaining of oral and pharyngeal inflammation. Examination showed his disease to be amygdalitis purulenta—"quinsy." It terminated in suppuration, its character being thus conclusively established. Believing that suppurative amygdalitis is usually due to ærial poisoning, I determined to investigate more minutely than I had previously done the man's ærial surroundings, with some hope that I might thus reach the cause of his dental caries. But my investigation showed nothing It was brief and eminently unsatisfactory. I ascertained that he had been living in and frequenting the same buildings during somewhat more than the period of his dental decay; but I found that his quinsy had supervened on an absence from home of a month's duration, and had appeared three or four days after his return. Apparently, then, since he had inhabited the same localities so long without quinsy, this disease had been contracted during his absence.

The synchronism of his habitation of his present abode and the caries of his teeth seemed suspicious, but inquiry, made on his presentation of dental caries and now repeated, showed that the house was apparently healthful; that it had in fact, every apparent advantage, and seemed above suspicion. The synchronism was therefore set down as a chance coincidence, and the problem of the dental caries was no nearer solution than before.

A few months elapsed, and the patient appeared again, suffering a second time with quinsy. The tonsillar abscess being evacuated, his case came up for consideration.

I hold, as I have said, that purulent amygdalitis is caused by ærial poisoning. I published some years ago, and justified by evidence fulfilling every logical requirement, the following theses: 1, suppurative amygdalitis is not in any way related to or dependent on mucous or catarrhal inflammation; it is a disease *sui generis;* 2, the predisponent of purulent amygdalitis is neither "plethora," "debility," nor "a previous attack;" it is the functional activity of the tonsil glands; 3, the excitant of purulent amygdalitis is never "cold;" it is always poison contained in the air inhaled (possibly, to include the suppurative amygdalitis which sometimes complicates scarlatina, I should add "or exhaled").

Holding this belief, and holding it not as an unproved hypothesis but as a theory established beyond reasonable doubt, I inquired concerning the patient's exposure to poison-bearing air. Where had he been? What had he been doing? Not the smallest light could be obtained from his answers. He had indeed, again visited the country. But he had avoided the house in which he had stopped during his previous absence from town; had not even been in the same region. And the visit to the country, in itself, could not be accepted as the cause of the amygdalitis; especially as he had frequently gone to the country in former years, and had never had the disease.

At length there was found a single similarity in the antecedents of his two attacks of tonsillar inflammation. Each had been preceded by an absence from his domicile for some weeks, and a return home. This one thing, the return home, was clearly shown by further inquiry to be that sole common antecedent which must be regarded as the cause. The quinsy poison was then in the house which the man had inhabited for years. Yet during these years he had had no quinsy. How was this? It was explainable by the fact that, while he was at home, his rooms were always well ventilated; whereas during his absence they were tightly closed, and he had on both occasions returned at night, and had slept on the infected pillows in the confined air of a month. (Have we not here, by the way, an explanation of the fact that purulent amygdalitis is more prevalent in winter, when houses are shut, than in summer, when they are open?)

The first etiologic insight being obtained, the view expanded rapidly. The patient was now, in spite of his quinsy, bright or vivacious. Though unable to talk before the evacuation of the pus, he said in writing that he "felt well," was "hungry," and that, while it hurt him to swallow, he got down "lots of milk and oysters." Sharply in contrast with this was his condition during his first attack. Then he had been "sick;" dull, drooping; he had had no appetite, swallowing a little soup or gruel occasionally with reluctance; he had been, in a word, prostrated mentally and physically. Equally marked was the contrast in recovery. Now, when the pus escaped, he was "well;" that is, without any great amount of felt indisposition; before, for days after evacuation he had been "sick," and had remained "indisposed" for weeks; not, certainly, confined to bed, but markedly prostrated.

What was the cause of the difference in the accompaniments of the two attacks? In both there was approximately the same amygdalitis and pus formation. The inflammation produced, in both cases, systemic disturbance. But, since the inflammation was approximately the same in both cases, there was quite certainly something else which intensified the systemic symptoms of the first attack. Eliminating, then, the similarities of circumstance of the two attacks, I sought the difference of circumstance. The only marked difference found lay in the place where the disease was incubated and endured. The first or prostrating attack came on after the patient had been at home three or four days, and was endured at home. The second or non-prostrating attack came on and was endured away from home (the patient having gone home after a month's absence, remained one day, and departed again). The prostration of the first attack was then quite certainly due, like the quinsy itself, to the house in which the patient lived.

The problem was solved. The etiology of the dental caries was at once transparent. The man had slept in a quinsy house; hence his quinsy. The atmosphere of the house (more strictly, of the rooms which he occupied) produced not only quinsy, but also general prostration; hence, in my judgment, the excessive "sickness" which accompanied the first attack. Did the cause which produced prostration when the man was ill also produce it, less conspicuously but no less really, when he was "well?" In other words, was the foul air of his domicile the cause of his atonic condition, and did this in turn produce his long continued digestive indisposition? I answered, with confidence, yes.

The step to the causation of his dental caries was easy. All dentists, probably, hold that the etiology of dental caries extends beyond the field of the microscope. All, necessarily, regard the saliva as a factor in the problem of dental decay. The evidence of an "epidemic constitution of the atmosphere" is as nothing in comparison with the evidence of an epidemic constitution of the saliva. How the saliva acts is an unsettled question. It is not even settled whether the saliva is, as to the teeth, a destructive or a protective fluid. Some dentists, not having seen any clinical evidence to the contrary, hold that acid saliva favors solution of the calcium salts of the teeth, and that alkalin saliva protects the teeth by neutralizing decay-producing acid. Others hold, with Dr. Black, the more elaborate hypothesis that normal saliva is protective, and that it acts germicidally; or, perhaps more properly, that this saliva modifies microbic life, diminishing the microbic secretion or so changing its character as to render it harmless. Others, with Dr. Palmer, regard the saliva as decay-producing, by reason of its being an electropoion fluid of greater or less power. Others, perhaps, without denying that there may be other features of salivary preservative or erosive action, believe that, the saliva being essentially protective to the teeth, one of its main prophylactic functions as regards dental caries is to dissolve and wash away such matter as tends to undergo acid fermentation—in a word, to cleanse the teeth. But whatever the hypothesis as to the mode of action, the fact, if not of salivary preservation of the teeth from caries, at least of the dependence of dental caries on the state or character of the saliva, must be universally admitted—if not explicitly declared, then implicitly held. It follows plainly that any state of the system in which the oral digestion or salivary function is impaired, is a state predisposing to dental caries. And, since the prostration of our patient impaired the gastro-intestinal digestion, I considered it reasonably certain that it impaired also the oral digestion—that it gave rise to saliva deficient in caries-preventing power.

Feeling satisfied now that I understood the case, if not in all its details, at least sufficiently for practical purposes, I felt myself in a position to endeavor to effect the radical cure which was the patient's great desire. My remedial measure will be evident without statement. It was, as the patient was only a lodger, an immediate change of domicile.

The sequel showed that my advice was probably

correct. The man left the haunted house and remained under my eye for fully three years. His improvement in tone, in the feeling of "general health," was noted by himself, and the improvement in his appearance, though not very marked, was perceptible. The general digestive difficulty, I think, disappeared; it certainly diminished, for it ceased to be noticeable. But what was of special interest to me and is of special interest in the present connection, was the improvement in the oral digestion; the fact that though the patient became comparatively lax in the local hygienic care of his teeth, he ceased to suffer from dental caries. It is true that two (I think three) cavities of decay were found in his teeth shortly after his change of residence; but these cavities were residual to the period of decay, and they were not followed by others appearing year after year. In a word, after removal from the poisoned house, the man became, as he had been before his sojourn in it, "proof against dental microbes."

Such are the facts of the case as far as I saw them. I sought to extend or supplement them by a more minute inquiry into the aerial conditions which produced the atony—the incipient cachexia. But my supplemental facts proved meager. The unhealthy house was a comparatively modern structure, with large rooms, plenty of sunlight and good ventilation; it was, in fact, as I have already stated, prepossessing. The rooms occupied by the patient were a handsome suite in the second story. The only elegance lacking in them was that which, if it had been present, might have been blamed as the source of "sewer gas"—the stationary washstand. There was, indeed, no apparent connection with any sewer; nor was there, at first glance, any apparent source of quinsy-poison. The source of this poison was not, however, very difficult to find. Not only did green or rot-inviting lumber appear to have been used in the construction of the building, but the apartments of our patient were directly over a room and cellar in which usually provisions and sometimes articles not free from decomposition were kept, and the apartments communicated sufficiently with the lower rooms to allow air to pass. The patient's apartments were always "close," and "smelled badly" after being shut up for a time. The quinsy, then, was readily accounted for; a month's concentration gave a large stock of putrefactive germs. But the prostration, and its consequence, the oral indigestion? Was it due to the same poison, acting in small quantity for a long time? Or was it due to some gaseous accompaniment of the poison which produced the purulent amygdalitis—some chemic accompaniment of the physical poison? I hold the latter hypothesis because of familiarity with the effects of chemic poisons on tissues and consequently on organisms, plant and animal; but confess that I do not know. It may possibly have been due to something which had no connection with the amygdalitis, *e.g.*, to a leak of illuminating gas, whose depressing effect on the human organism may be seen by inspecting the workmen in almost any gas factory; but this supposition, infracting Occam's caution, "*Entia non sunt multiplicanda praeter necessitatem*," is rendered highly improbable by the fact that the systemic prostration accompanying purulent amygdalitis is usually very great, usually exceeds what one would expect the abscess (which constitutes the disease) to produce.

I have now laid a foundation for a statement of generalities. I have reported a case wherein, if my interpretation is correct, dental caries was caused by systemic error and was cured by systemic treatment. But before proceeding to state generalities, and to make, finally, the plea which I propose to make for a more intimate working together of the general and the dental practitioner, it will be well to clinch one nail which I have driven. It will be well, especially since the presentation of the nature and the clinical origin of purulent amygdalitis is so recent that it has probably not yet received general consideration, to justify by the facts of this case itself, as far as these facts go, my immediate certainty, on finding purulent amygdalitis, that the patient had been breathing foul air.

The facts are these: Before lodging in the house herein referred to, he had returned to San Francisco several times and had never had quinsy; while lodging in this house he returned twice (and only twice), and had the disease both times. Confirmation is furnished by the supplemental fact that, after abandoning this house, he returned to San Francisco three times at least (probably more), and did not have quinsy at any time. Clearly, then, the cause of the quinsy was not San Francisco; it was the house; in other words, it was not cold; it was poison in the air.

While I am speaking parenthetically, it may not be amiss to make another digressive remark; to call attention to the difference in the period of incubation of the two attacks of amygdalitis in the case reported. The first attack appeared probably three days and certainly not more than four days after exposure; the second attack did not present its initial symptoms till at least the fifth and perhaps the sixth day. The reason of this difference in time of incubation, though it seems fairly plain, as it has no relation to my present subject, I can not here discuss; I merely note the fact in passing, because it is seldom that we have an opportunity of observing two different periods of incubation of the same disease in the same individual at the same time of life.

Returning now to our subject we are ready for generalities. First, I may state that dental caries is not usually idiopathic. In this disease the general is not dependent on the local; it is the local which is dependent on the general. We speak of "frail teeth" as "prone to decay," or, more flatly, say that teeth decay because of their frailty. But when we speak thus we do not, or at least should not, mean literally what we say. If the salivary function (which is directly dependent on the general or systemic condition) is normal, the teeth, however frail, are safe from caries. And, contrariwise, the strongest teeth, though more resistant than frail teeth, will, under adverse systemic conditions, succumb to decay.

Next let me, as well as I can in a brief space, discriminate between idiopathic and systemic or symptomatic dental caries. Generally, I may say that cavities of decay on the morsal aspect of a denture are not to be considered as of systemic origin. To this rule, however, the exceptions are exceedingly numerous; they are based on this consideration: Rapid decay on any aspect of a denture, is to be regarded as due to systemic disturbance. Generally, again, it may be said (the exceptions are few) that decay on the proximal or buccal aspects of the teeth is symptomatic or of systemic origin, and calls for

something more than local treatment. It is true that we sometimes find cases in which we can feel reasonably certain that there is a direct salivary defect; cases of idiopathic salivary deficiency. But such cases are so rare as to throw the presumption on the other side. We may safely say, then, that proximal decay is to be generally regarded as a result of distant disorder or systemic depression.

Let me repeat here, to avoid possible misinterpretation and, incidentally, to be more explicit:

1. Dental caries is commonly due to fermentation of food, and occurs only where food lodges or remains for a sufficient length of time to undergo fermentation; it occurs, that is, only where there are lodging-places for food, *i. e.*, on the proximal faces of teeth which stand close together, on the buccal faces where the gum forms a pocket for the retention of food, and on any face where deep sulci, pits or fissures hold food till it undergoes fermentation. Those exposed or smooth surfaces of teeth where food can not lodge are always free from decay.

2. Normal saliva prevents dental caries, either by preventing decay-producing fermentation, or by overcoming the effects of this fermentation. It is in fact preventive of this fermentation or its results to a greater extent than one would, *a priori*, think possible. The saliva has scanty access to interdental spaces more or less filled with food; yet, in spite of uncleanly habits, normal saliva prevents proximal decay. The saliva can scarcely reach the filth-covered cervico-buccal portion of the teeth of the uncleanly; yet the dirtiest teeth are often free from buccal caries. Again, fissures and pits penetrating the enamel would be expected invariably to become seats of decay; but where the saliva is normal such fissures and pits are usually innocuous; they do not, in health, become centers of caries.

3. Anatomic (*i. e.*, macroscopic) faults of the teeth, such as pits and fissures, and errors of location, such as over-lapping, are sometimes so great as to lead to decay in spite of normal saliva. Decay due wholly to this cause is, however, rare except in teeth which, besides having the gross defects mentioned, are microscopically (histologically) defective; so-called "frail" or "soft" teeth—teeth wherein the mineral matter is lacking in solidity of structure, either as a whole or in spots, or, as may be the case, both as a whole and in spots; and even in teeth which are decidedly frail, pits and fissures of moderate size and depth, and irregularities of moderate extent, are, with normal saliva, innocuous.

4. "Frailty" or histologic defect of the dental tissues, even to the extent of what might not improperly be called idiocy of dental structure, rarely if ever produces idiopathic dental caries.

5. Decay-producing error of saliva is undoubtedly sometimes idiopathic. We find differences in the saliva of different persons, both in quantity and in quality, under circumstances which render us reasonably confident that they are not due to what we may for brevity, call systemic disturbing causes.

6. Idiopathic dental caries is relatively rare. The presumption is therefore always that the disease is secondary or symptomatic. The least attentive observer will see that it is symptomatic when, after many years of complete dental soundness, suddenly every fissure becomes a seat of caries, while the disease at the same time attacks the proximal faces of the teeth in many places. From cases like this we may descend step by step to those wherein the most observant can not assert with confidence the nature of the disease. The pathognomonic signs of symptomatic dental caries may be stated as follows: *a*, its residue is "moist" or "leathery" in character; *b*, it is rapid in its progress; *c*, cavities are found to have originated simultaneously in different parts of the mouth. The severity of the systemic disturbing causes may be determined by noting which faces of the teeth are attacked. If the systemic cause is mild the decay will be confined to the fissured morsal surfaces, or will at most attack the buccal pits of the molars. If the systemic cause is pronounced, the proximal faces of the teeth will be attacked, perhaps also the buccal faces close to the gum margin.

7. Beyond symptomatic dental caries, using the term in its strictest sense, there is usually, after removal of the ultimate cause, some further decay of the teeth—what may not improperly be called residual decay. This is a phenomenon which we might perhaps have anticipated, *a priori*, for (apart from the probability that incipient dental caries is sometimes overlooked, to be discovered in an examination at a later date) a return of deranged salivary function to complete normality might be assumed to take time, even after full removal of the cause of the derangement; but as a fact I never thought of it till I observed it in practice, when it occurred to me, first, that I had seen it in other cases without noticing it, and then that it was a natural thing to expect.

I do not know that this residual decay has been noticed or commented on by others and therefore speak of it only from my own experience. It has appeared to me, in cases wherein I have felt able to fix the date of removal of the fundamental cause, that there was a period of some months, possibly a year or more, wherein dental caries continued to appear, though with diminished severity. The disease seemed to subside, as a rule, gradually, not instantaneously. I think it well to make a note of this both for confirmation or disproof by others, and also because residual decay if one did not expect it might prove misleading.

Having discriminated between idiopathic and symptomic dental caries, it remains to ask on what other diseases or on what fundamental causes the symptomatic dental disease depends. Primarily, symptomatic dental caries is plainly due to disorder of the oral digestion, fault of the fluids of the mouth. Unfortunately, having said this, we have almost reached the limit of present knowledge. The sources of oral apepsia are incapable at present of being pointed out with even an approach to definiteness. We naturally first look to the other portions of the digestive tube as theoretically likely to be the over-shadowing source, by extension of derangement, of oral mal-function. But, clinically, we find in many cases that gastric or intestinal disorder is not accompanied by decay of the teeth. The oral function does not seem to sympathize universally with that of the lower portion of the digestive tract. Gastric or gastro-intestinal error (atonic dyspepsia particularly) does indeed frequently accompany the oral error, but it is probably only a joint result of a common cause. In a word, we do not find any one great or especially probable source of salivary derangement. We find merely that dental caries seems to spring from the most diverse causes with equal readiness, in fact, from almost anything which ap-

pears likely to diminish the vigor of the ultimate cells or to drain or to enfeeble any portion of the organism.

This general statement, vague as it is, presents nearly all our present knowledge on the subject of the fundamental etiology of the disease. A little definiteness may be given to the statement of causation, but only a little. We can say, cautiously, that with our present limited clinical knowledge, in male subjects not suffering from any evident organic defect, lack of good air and exercise seems the first subject of suspicion, the most probable cause. We can say that, secondarily, in these subjects, our limited experience would lead us to look to the nitrogenous diet as a fairly probable cause. For the avoidance of possible misinterpretation, I must explain that while it is the carbohydrates which, by fermentation in the mouth, directly yield the (acid) agent, which, corroding the teeth, produces dental caries, and while therefore a strictly nitrogenous diet could probably not cause dental decay because it would be devoid of acid forming material; on the other hand, the proteids, when ingested in large quantity by persons of sedentary habits, seem to give rise, probably through their effects on the greater glands, to decay-producing error of the salivary secretion; in other words an ill-advised largely-nitrogenous diet may and apparently does produce an oral or salivary condition favorable to that fermentation of carbohydrates which causes caries of the teeth.

In young men our observation would lead us to say that, even where it does not produce perceptible gastro-intestinal error, irregularity of life (sexual excess particularly) should be first suspected, it being a common, if not the most probable, cause of dental caries. In the female subject, the "organism round the uterus," the center of the organism appears to be the most suspicious point. Experience has shown that, not only pregnancy but also almost everything amiss in the female generative system, is accompanied or followed by dental decay. Caries of the teeth comes on so frequently between puberty and the menopause, ceasing when the cervical canal is rendered patulous or some other change for the better is wrought at the center of the organism, that we are amply warranted in first suspecting, in females, that the cause of our dental disease is a generative trouble.

But having said all this, we who are practicing dentistry must confess ignorance—ignorance on the one hand and inability to act satisfactorily (by reason of the burdens imposed on us by the necessary local treatment) on the other. We find that we can not yet say with certainty that any given general cause will always produce, or that any given pathologic condition will be always accompanied by caries of the teeth. We find (to take an actual case) the same person suffering at three different periods with gastric or intestinal dyspepsia or both; the first and the third attack were accompanied by dental caries (which ceased with the disappearance of the gastro-intestinal difficulty); the second attack, though it continued for two or three years at least, was not at any time accompanied by caries of the teeth. We find ourselves, in a word, when we come to the fundamental etiology and therefore to the radical treatment of dental caries, unable to answer any but the simplest questions; to solve any but the simplest problems; to cure any but the simplest cases. We are able, certainly, sometimes, to see through a case of dental caries almost at a glance, and are able occasionally to point with ease the way to positive cure. But the cases wherein the cause of dental caries is obscure outnumber those wherein it is easily discernible. The one which I have reported for the sake of illustration may be taken as a sample of those which we daily encounter; and in cases like this, in the diagnosis of the fundamental difficulty, we who are practicing dentistry usually need assistance. Again, when the cause of the dental disease is readily perceptible, we usually need the aid of the general practitioner in its removal.

It is idle to say that he who undertakes to treat a disease should go to the bottom. As a practical fact, the dental practitioner, however thorough his understanding of the nature and the treatment of disease in general and of those extra-dental pathologic conditions with which dental diseases are connected in particular, finds that the burden of attention to local manifestations is usually all that he can bear; he must practically, as a rule, refer his patient for the radical cure of a dental difficulty dependent on a general cause, to some one else; perhaps to the special practitioner in some distant field, but usually to the general practitioner. Hitherto, owing to inattention on the part of the general practitioner to the matter which forms the subject of this paper, the reference has been made by the dentist with comparative infrequency; and when made has not always received attention. In the future it is to be hoped that it will be made more frequently, and that it will meet with a more general and a more thorough response. We who are practicing dentistry are not content to merely temporize. And if we were content to do no more than, locally, to "meet indications," our patients would not always contentedly acquiesce; for they are, some of the more intelligent at least, awaking to the fact that dental caries has more than a local meaning; and, in the interest of their general as well as of their local welfare, they are beginning to desire not merely treatment of symptoms, but cure. This, the actual cure of dental caries, we are as a rule unable to effect alone. We need the aid of those who are practicing in the general field. My aim, in this paper, has been to show that this aid can be frequently effective. And I close with an appeal for the assistance which will accomplish the end; an appeal like that of the man in the vision to the apostle: "Come over into Macedonia and help us!"

DISCUSSION.

DR. DUNBAR—The etiology of caries of the teeth is difficult to discuss, and I am quite ready to accept the views of the essay as to systemic influences as a general cause of decay. Original defective development of the tooth, Dr. Dean touched upon as one of the principal predisposing causes of decay. There is no question that it is an acid in some form mysteriously supplied which causes the first breach, and people moving into malarial districts are liable to many conditions which develop into loss of teeth. I heard many years ago a prominent dentist, who lived in a miasmatic district, declare that he could not save pulps when they were once diseased. So, also, the references to quinsy poisoning are certainly verified in this malarial environment. There is no question that we are on the right track for the discovery of the mysterious acid which makes the first breach in sound teeth, and opens the way for decay. We are on the verge of an important discovery to add to and supplement those of Miller, of Berlin.

DR. DEAN—I present here two teeth for inspection, and I would like an opinion as to whether the trouble with them is decay or erosion. The history is this: The teeth are

baby teeth. The child during its second summer was very much troubled with digestive difficulties—it is not fashionable to think there is any connection between such difficulties at this time and teething. The four central incisors above and below were present, but no other teeth. The upper ones presented on the points when erupted, what I thought was caries. Now I want to know what it is. The cavities approached to pulp so close that I could not attempt to fill. The four cuspids presented some appearance of erupting. I lanced over the two which were nearest to eruption, but it did not check the diarrhea. Then I cut for the others, and within twenty-four hours the digestive difficulty improved, and within a week the child had entirely recovered.

DR. L. A. TEAGUE, San Francisco—I would ask Dr. Dean why lancing was resorted to?

DR. DEAN—My belief was that the digestive difficulties were due to nervous reflex by pressure of the gum on the advancing tooth, that pressure being reflected on the papilla underneath. I lanced for the purpose of relieving the tension.

DR. TALBOT—I have had it in mind to write the same sort of a paper as this of Dr. Dean's for five or six years. We are indebted to Miller for the establishment of the relation of bacteria to the causes of caries, but we have to go outside of dental practice to find the causes of decay. I don't think the writer of the paper meant to say that the poisonous air in the home of the patient acted directly, but that it produced a neurosis which caused the lesions with which he was troubled. Neuroses, eruptive fevers, cause mal-development of the teeth and bones. It is a fact that these troubles are due to lack of tonicity in the nervous system, as is nicely demonstrated in the case of the pregnant female, whose loss of teeth is due not to a lack of lime-salts in her food, but to the lack of tonicity in her nervous system which prevents their proper assimilation. It is to this cause we have to look for many of the troubles which we as dentists are called on to combat.

DR. DUNBAR—It has often been said that we as a race are going to lose our teeth; that we as Americans are most prone to diseases of the teeth. Those who make these assertions cite old country districts and say they don't have these things there. It has been said that the cause of the difference is our American environment, our climate, the mixture of races, etc. They forget, in enumerating the causes of the state of affairs they describe, the circumstances under which our forefathers took up their residence here. Almost universally they had plenty of hard work to do and they raised large families, for which the mothers did all the work. Isn't it possible that a broken-down mother may transmit to the tenth or the twelfth child, especially if it is a female, her own exhausted nervous system and that that is in some cases, at least, the secret of the "poor American teeth?" Then our American haste, our constant rush for money, make us nervous and we can't transmit, under such circumstances, an unimpaired nervous system to our children. On the other side, they are more contented with their lot; here we are dissatisfied with our income and always trying to increase it. We are a neurotic people and we are begetting neurotic children. More of the difficulties against which we have to contend are due to this cause than is generally understood.

DR. A. C. HART, San Francisco—My father had good teeth; my mother poor ones. I have my father's denture. He had but one lateral incisor; I have none, but my other teeth are like his in form and quality. My brother has teeth like our mother, of poor structure, and decay progresses among them in the same way as in hers. My preceptor taught me if I found decay on one side of the mouth, to look for it in the same teeth on the other side, but while this is a good rule, it does not hold in all cases. I confess I am puzzled to account for many things, and I have to refer them to a principle which I call life-force. For instance, why is it that there are only boys born in one family and why all girls in another? I have reached the conclusion that when the man is stronger the child is apt to be a boy; when the woman is stronger, the child is generally a girl. Whichever of the parents is stronger makes the impression on the embryo which determines its sex. There are many things in which if we change the environments we change the results.

DR. TALBOT—Two points have been referred to by Dr. Dunbar and Dr. Hart upon which I want to say a word. Dr. Dunbar said there was more decay and more deformity of the teeth here than in Europe. If you take the class of people in Europe who can be fairly compared with the people here, their teeth do decay as much as here, and deformities are more prevalent and more marked there, especially among the aristocracy. I have just read a paper before the Neurological Section of the ASSOCIATION on this subject. The Spanish people have the most difficulty from the neuroses which produce deformities among the aristocracy of Europe. Dr. Hart brought up the point of heredity, but it is not quite fair to give a conclusion on one case only. The tenth child may be the best of all. Heredity works both ways.

DR. LUNDBERG, San Francisco—I differ from Dr. Talbot as to the condition of the teeth of the aristocracy of Europe, especially as to the part where I came from, Sweden, as I am sure they have good teeth.

DR. TALBOT—Do they not have a great deal of decay and many deformities?

DR. LUNDBERG—Not more so than here. There is no other nation of Europe where the teeth are in a more excellent condition, both in the aristocracy and the mediocracy. This is attributable to their mode of living. Their food is not so generous as here. The caries and defective teeth of Europe may be traced to gestation. You may find good teeth among people who live luxuriously, if the mothers take exercise and live on nourishing food. I don't think you can fairly say that the people of Europe have as bad teeth as the people have here.

DR. DEAN—I have asked a question as to abscess unconnected with the gingival margin. I understood Dr. Younger to say that there is always some opening to or connection with the margin. I would like to ask if any one has seen a calculus unconnected with the gingival margin? (Receiving no reply, Dr. Dean said that he had specimens which seemed to be of that nature.)

THE DISEASE OF INEBRIETY.

ITS STUDY FROM THE STANDPOINT OF THE EXPERIENCE OF AMERICAN PHYSICIANS OF EMINENCE WHO HAVE WORKED IN THIS FIELD OF RESEARCH.

BY EDWARD C. MANN, M.D.
NEW YORK CITY.

(*Continued from page 853.*)

SPREEING AND TIPPLING.

A not uncommon form of the tendency to inebriety is manifested, especially in young men, in whom the propensity is not fully developed. This consists in the practice of occasional "spreeing," as it is sometimes termed. This forms one of the earliest stages of the habit or attack, and may be properly termed the formative stage. It makes its appearance on occasions of rejoicing, at festivals and celebrations, on Fourth of July and during the holidays. At other times the propensity is dormant, and the individual is in no way affected by it. There is a feature in this malady, which may be properly noted in this place, and that is that in the advanced stages of the disease nothing satisfies but complete intoxication. So completely is the system under the influence of the morbid propensity, that the desire to get drunk is irresistible. No lesser degree of exhilaration or excitement answers—nothing but total obliviousness satisfies the craving propensity.

Inebriety makes its appearance as other diseases make theirs, sometimes by the fault of the individual attacked and at other times from causes over which he has no control. The propensity is quite often hereditary, and transmitted from one generation to another, in accordance with the same law by which any constitutional taint, like scrofula or tubercular disease is handed down. The law of development which, from the germ, fashions and matures an individual, and by which it is made to resemble its prototype or parents, will also in due time bring forth the defects which may have existed in a previous generation. The fact is a familiar one, that children resemble

their parents to a certain extent in mental characteristics, disposition, peculiarity of constitution, temperament and form. They are, however, not born with all these characteristics present, but as the child is developed into the man they, one after the other, make their appearance. With the development of consumption under this law we are all familiar. The child is born with a tuberculous taint. During the years of its childhood it may be well and sprightly, keep pace in growth with the most robust; but in the course of its development it reaches a point where its prototype fell into decay and died. This individual will do the same. A tendency to drunkenness will be developed under the same general law. The child will give the fairest promise, its youth will be one of innocence uncontaminated by evil influences, and the first years of manhood will be free from spot or blemish; but the critical period arrives and suddenly like a fatal cancer there is developed this morbid propensity. The man becomes changed, his appetites are aroused, his whole nature undergoes a transformation, and the prospect of his early years is blasted by drunkenness. No condition in life is exempt from such instances. We meet them everywhere, in the pulpit, on the bench, at the bar, in the church and among "all sorts and conditions of men." The period in life at which the propensity to drink is developed varies in different individuals. In some it appears in early youth, in others in the first years of manhood. The great number of young men addicted to the intemperate use of ardent spirits, who are to be found in our large cities and principal towns are examples of this class. Cases also occur where late in life the propensity first makes its appearance. Other forms of drunkenness are apparently brought on by disturbances or by great excitation of the emotional nature, or by the depressing passions, especially by grief, disappointment, mortification, shame, or loss of property, etc. In many cases the exultation following the accomplishment of some successful undertaking excites a paroxysm of inebriety. I have been led to believe that this form of emotional excitement is more frequently the immediate cause of an attack than those disturbances attended by depression of mind. The rapid accession to fortune, political distinction, success in any enterprise are very often the precursors and excitants to a course of inebriety.

The practice of tippling has heretofore been regarded not only as the ordinary but the sole cause of the development of inebriety. In fact, every case formerly was attributed to this practice. Under this view the individual was looked upon as voluntarily entering upon a habit which was sure to bring upon him a drunkard's fate. This practice has consequently been denounced as criminal, and the drinker been subjected to the severest reprobation. The courts have held that the delirium of intoxication was no excuse for violence or crime of any kind, for the condition was brought on by the voluntary act of the individual himself. It must be evident, however, that this practice is but the first manifestation of the morbid propensity, and is as much a part of methomania as is the subsequent continuous orinveterate stage. The inclination to tipple, whenever occurring, should consequently be regarded with alarm, as indicating the approach of a most serious and grave disease. Measures to arrest its advance should at once be employed, as any sanitary precautions are taken to prevent the approach of yellow fever or cholera. It is in this stage that recovery is most likely to take place, for the disease is then only in process of formation and it is more easily thrown off. The will then has not become weakened or overpowered and the recuperative energies of the system have not been impaired.

In that form of inebriety which has been attributed to the influence of emotional disturbances, it may likewise be doubted whether these influences are the direct cause of the paroxysms; they only operate as exciting causes, and by their influence upon an organization already predisposed, weaken the power of resistance, and give favorable opportunity for the development of the disease. We have all seen individuals drawn into the vortex and swept away under disturbances of the emotions and passions, and this is no more strange than that the same causes should, in others, disorder the intellect, destroy its balance and overwhelm its faculties; occurrences which I believe are not uncommon. Do not both these conditions equally claim our sympathy and benevolent exertions? Is one *wicked* while the other is properly regarded as *unfortunate?* In all of these cases, both of methomania and insanity, we mut recognize a previous predisposition to the attack. The fact that many undergo all these emotional disturbances and excitement without developing either drunkenness or derangement of mind, is conclusive that they alone are insufficient. There is a previous susceptibility to these attacks which must be regarded as unsound and morbid.

It may be remarked as to the effects of this disease upon the character of the individual, and its influnce upon the moral and affective faculties, without reference to any consequent organic lesions or functional derangement, that the tendency of the practice of drinking is to obscure and destroy all the higher and nobler impulses of human nature and in prolonged cases, where the disease has wrought out its full effects, the subject of it may become completely debased and lost. Under every circumstance the effects of alcoholic indulgence are dire enough, as we all must admit, yet I believe that we have been accustomed to regard the drunkard as lost, too soon. He is not always, in fact, I believe that he will rarely be found to have become utterly abandoned. I do not believe that, even in the worst cases of inebriety, one's manhood is entirely obliterated. It is often completely overborne by the power of that terrible propensity to drink, so that no signs of its existence are put forth; but give it the opportunity, let an opening once be made in the prison house in which it is incarcerated, and the soul and the higher instincts of the man would spring forth once more, like a bird escaped from its cage, to enjoy again their freedom and a new life.

The whole subject is one of engrossing interest. Upon the medical profession will devolve the duty of treating the subject in the light of true science, in the hope and belief that, as variola has been or can be rendered harmless by vaccination, so the proper employment of remedial measures may exterminate or at least make powerless for evil, the fearful scourge of inebriety.

Elsewhere, Dr. Burr says: "It is this condition of the nervous system calling for alcoholic stimulants that is essentially the disease. This condition begins when the first inordinate desire is experienced. The

intensity of this desire, whether it be mild or virulent, does not change its character. The slightest departure from a normal appetite indicates the beginning of inebriety. The first unnatural longing for drink is essentially of the same nature as the most inveterate and uncontrollable desire. The difference is only in degree.

"The medical profession must study this subject as physiologists and pathologists, and not as moralists or reformers. The laws governing the organism, the dependence of a healthy mind upon a healthy physical condition, the transmission of normal sensations only through the media of sound nerve trunks and *vice versa*, are well determined facts, and they must be recognized and applied in the consideration of the subject of intemperance, and in explaining the unnatural phenomena of the inebriate."

The late Dr. D. G. Dodge, one of the trustees and formerly superintendent of the New York State Inebriate Asylum, at Binghamton, N. Y., some years ago expressed himself as follows, in a paper on "Inebriate Asylums and their Management": "Inebriety is a condition of the system exhibiting a class of symptoms resulting from a long-continued and excessive use of alcoholic stimulants which brings the subject to a condition he is too weak to overcome and for which he is not responsible. All stimulants containing alcohol must produce this disease; but those containing the most alcohol, when habitually taken, act more thoroughly and rapidly It is alcohol and nothing else that is the exciting cause of the disease. Occupation has a powerful controlling influence in developing or warding off the disease. In-door life in all kinds of business is a predisposing cause, from the fact that nearly the whole force of the stimulant is concentrated and expended upon the brain and nervous system. A proper amount of out-door execrise, or labor, tends to throw off the stimulus more rapidly through the various functional operations of the system. Occupations of all kinds, mental or muscular, assist the nervous system to retard or resist the action of stimulants—other conditions being equal. Want of employment or voluntary idleness is the great nursery of this disease. The use of tobacco predisposes the system to alcoholism, as it has an effect upon the brain and nervous system similar to that of alcohol. The use of tobacco, if not prohibited, should be discouraged.

Statistics show that inebriety oftenest prevails between the ages of 30 and 45. The habit seldom culminates until 30, the subject, to this age, generally being a moderate drinker; later in life the system is unable to bear the strain of a continuous course of dissipation. Hereditary inebriety, like all transmissible diseases, gives the least hope of permanent cure and temporary relief is all that can generally be reasonably expected.

(*To be continued.*)

Admirable Memorials.—"Not storied urn or animated bust" can do that for the honoring *in perpetua* the names of departed friends, that can be done by the establishment of beds in hospitals bearing the names of the deceased. Mrs. C. M. Jeanes, of Philadelphia, has acted on this principle and has given $10,000 to the German Hospital of that city to endow a free bed in the name of her father, Mr. John Kohler; also $10,000 as a free bed fund to the Episcopal Hospital for her mother's remembrance, the bed to be known as the Catherine Sulgar Kohler bed.

SOCIETY PROCEEDINGS.

Proceedings of the First Meeting of the American Academy of Railway Surgeons.

Held at the Grand Pacific Hotel, Chicago, Ill., Nov. 9 and 10, 1894.

(*Continued from page 989, Vol. XXIII.*)

Dr. C. K. Cole, Chief Surgeon, Montana Central Railroad, Helena, Mont., delivered the following address on

THE OBJECT AND AIMS OF THE AMERICAN ACADEMY OF RAILWAY SURGEONS.

The Chairman of the Committee on Permanent Organization has placed me on the program for an address on the objects and aims of the American Academy of Railway Surgeons. I confess, at the outset, that the subject has not received at my hands the consideration its importance demands. If my statements are too brief, or too lengthy, too enthusiastic or too scant in facts, the fault may justly be charged to my friend, Dr. Reed, whose large experience should have taught him more discernment than to have selected me for such a task.

We have met to consider the advisability of organizing a Society of Railway Surgeons, which shall be cosmopolitan in character, in the sense of including representative and active men from every section of the United States, and yet whose distinctive features shall include a strictly limited membership; the limitation not applying to any particular class or grade of railway surgeons, but to numbers only. A society which shall have for its prime object the promotion of the study of railway surgery as a special and important branch of the chirurgical art. We have not met to decry the efforts of others in this field, nor in any wise to antagonize any individual,or any set of men,in any department of medicine whatsoever. This statement seems warranted at this time, in view of the fact that it has been sought to show that our motives were not free from prejudice and bias. In this connection I may be pardoned for suggesting, that if any of us in this assembly are possessed of any other desire in connection with this first meeting than that of the development of a higher order of railway surgery, such person would best subserve the interests of the proposed organization by withdrawing before a permanent organization is effected.

However widely divergent our views may be as to methods, I assume that we are agreed that there is urgent need of steps looking to the placing of railway surgery on a higher plane than it has hitherto occupied. A facetious critic in a recent journal article, entitled, "The Evolution of the Railway Surgeon," undertook to show the folly and unwisdom of claiming any special skill or requirements in the practice of railway surgery, or the necessity for organization on the part of those engaged in this work; the experience of those present here to-day, indeed, the very fact of your presence here, is a sufficient refutation of this idea.

How best to effect an organization which shall successfully accomplish the objects in view, demands our earnest and most careful consideration at this time. During a number of years past, various plans of organization have been discussed by those more or less interested in this work. These plans have been so numerous and varied, that it is impossible in the time at my disposal to rehearse them fully and in detail. Among them, however, may be mentioned: 1, a large popular body, made up of all those engaged in the practice of railway surgery in the United States, the Canadas and Mexico; 2, a delegatory body whose members should be annually elected from State or district societies; 3, representation in a central National society by railway systems, by States or by districts, which should each include

six to twelve States. In addition it has been suggested that separate organizations be had for Local, Division and Chief Surgeons. These and other plans have each had their day and advocates, until comparatively recently, when the consensus of opinion seemed to indicate that a society with a limited membership and composed of experienced railway surgeons, of whatever grade, and who have demonstrated their qualifications for, as well as their abiding interest in railway surgery, should be formed. Generally speaking the railway managers and legal counsel, have heartily approved the plan as herein outlined, so that it remains for us to organize a society that will prove a permanently influential factor in the advancement and upbuilding of this important department of our great railway corporations.

This organization will prove useful and effective, exactly in proportion as its founders exercise care to eliminate, at the outset, such objectionable features as have been proven in experience to be dangerous. We must agree in advance that our first object is honest effort in the interest of science, so that those who look to us and depend upon us will, perforce, applaud and second our efforts, as improved methods and better results shall impress them with our sincerity of purpose. We must agree upon a plan or basis of organization which will most nearly meet, not only the conditions at present existing, but also such exigencies as are likely to arise in the future. We must agree to avoid strenuously those elements which experience has shown us to be disastrous. We must, in brief, agree that there exists a genuine necessity for such an organization as it is proposed to effect at this time. If we can not agree upon these various points, and in addition that we will each, to the best of his ability, devote time and energy now and hereafter, to the erection and maintenance of an harmonious structure for the purposes intended, it were better that we should at once separate and leave to others a task of such momentous importance.

The eyes of the railroad world will be upon us; our action will be scrutinized and perhaps our motives impugned by those who do not wish us well. We must be prepared to meet certain unjust criticisms and predictions of failure on the part of those who do not love us or our cause. We must assure ourselves of the propriety of our motives and the rectitude of our course, so that our honesty of purpose may appear to the public in such a manner as to serve as a bulwark of defense against those who seek our discomfiture by inveighing against us.

It has occurred to me to supplement these remarks by reading a draft of a Constitution and By-Laws which will be submitted for your consideration some time during the session, and with the permission of the President, and if no one objects, I will proceed to read.

[The proposed Constitution was then read, and will be published hereafter as adopted.—ED.]

DR. W. J. GALBRAITH, Chief Surgeon, Union Pacific Railroad, Omaha, Neb., delivered the following address on

REASONS FOR THE ORGANIZATION OF THE AMERICAN ACADEMY OF RAILWAY SURGEONS.

It is my aim to present to this honorable and distinguished body of railway surgeons, some of the practical necessities and reasons for the organization of the American Academy of Railway Surgeons—an organization, born, so to speak, of the advancement of a scientific period wherein, in my opinion, we are in duty bound to combine our knowledge of modern railway surgery, as well as our experience and mechanical ingenuity, in this our special field of the chirurgical art, and thus advance and promote the standard of railway surgery in this country, and at the same time offer better protection, in times of wrecks and serious accidents, to the employe, the passenger and the company we represent.

I shall not take up your time by going into and defining the many detailed reasons for the organization of this Academy, but on the contrary will attempt to point out some of the evil influences we must at all times guard against to insure its success, and especially at our regular meetings. I feel confident that unless we observe the proper course of discipline and keep harmony in view, it will be but a short time—yes, a very short time, until the primary objects of this organization will have been lost sight of, and the Academy fall into disrepute.

The reasons for this organization are the proper demands of our companies for us at all times, regardless of political and personal motives, to consider and study the scientific principles of how best to render surgical aid to the special classes of cases that fall into our hands by virtue of the positions we occupy as railway surgeons. Moreover it would be a fruitless task to attempt to demonstrate to you the many ways that we can assist in elevating the science of railway surgery, as well as how best to consider the many perplexing medico-legal problems that are frequently referred to us by the great corporations we represent, as well as in times of legal strife and trials, when we are summoned to appear in court as surgical experts. The great difficulty of establishing facts in personal injury propositions are well known to every judge. Our experience should map out to us the loyal and proper course to pursue, in order to protect our companies from fraud and deception. It is useless for me to dwell upon the necessity of the proper discussion of this monstrous subject, but suffice it to say, that it is one of the principal reasons for the organization of this Academy.

This Academy fully appreciates the great importance of the many complications of railway surgery and the scientific requirements of a better knowledge of the same.

It affords me great pleasure to announce, not only to the managers of railroads but to the general public as well, that this Association fully appreciates the vast field that is open to it for investigation, and by our combined efforts and constant research we shall hope to elevate our calling. With so many scientific problems before us for investigation, why should we invoke the disgust of our managers, by making useless and foolhardy recommendations as to the proper automatic car couplers to be used, or indeed to attempt to promulgate legislation looking to the passage of laws compelling all railroads to equip their rolling stock with uniform safety appliances. Action of this kind might be proper and indeed humane, but I do not deem it within the province of this organization. Nor should this organization, at this time, consider such sanitary problems as the reconstruction of the modern Pullman car, by doing away with the present elaborate upholstering and draping; or recommending that cars be especially constructed for the transporting of consumptives and attached to all trans-continental trains in order that healthy passengers might not be exposed to the contagion or infection of tuberculosis and kindred diseases. Nor can we consistently recommend that hospital cars be maintained at all division terminals of our large railroad systems for use in times of emergency. The extreme impracticability of these and many other schemes that have been advocated by some of the younger and less experienced railway surgeons in the past, is fully appreciated by this body of surgeons. Pause, for one moment, and consider the enormous expense that would be entailed by equipping with hospital cars a single railroad like the Union Pacific.

We should not lose sight of the fact that our railroads are managed by the most able men, in their special avocations, the country affords; and that these managers have placed at the heads of the various departments of their roads, men of corresponding ability. It is the business of heads of mechanical departments to investigate the merits and de-

merits of whatever safety or other devices are offered, and make their recommendations to the general manager. It would be absurd then, I say, for this organization of scientific men, to mix itself up in mechanical problems that should be left alone to the mechanical and operating departments of our railroads.

One of our most prominent railroad managers, in conversation with me, a few days ago, commented most favorably upon the business-like appearance of our program for this meeting, and suggested that it would be wise to send a copy of it, as well as of all other matter pertaining to the Association, to every manager in the country, in order that they might see and know what we are doing, and especially familiarize themselves with the manner and methods employed by us in promoting this important adjunct to the modern operation of railroads. I can assure you it would give me great pleasure to have with us here to-day, all, or at least a majority of the prominent railroad managers of this country, that they might see and appreciate to a small extent, at least, the zeal that is manifested by this gathering of earnest intelligent surgeons, to promote by unified research, the important specialty of railway surgery. I am glad to state that Dr. Reed will be able to give you some very surprising information concerning the railroads in this country, as well as in the Dominion of Canada and Republic of Mexico, who have expressed themselves through their general managers as being highly in favor of an organization based upon such meritorious principles as are declared by this Academy. And also, that we are encouraged and supported by the most eminent contributors to the literature of railway surgery of our times. This is certainly a very strong incentive for us to use our best endeavors to make the very most of this organization from a scientific standpoint, and truly earn that exalted motto of the Academy, "The higher the order of railway surgery the greater the protection to the employe, the passenger and the company." For what does this encouragement mean? Does it mean that we have, by false pretenses and deception invoked the support of these leading railroad men? or, does it mean that these men recognize the necessity of an organization of this kind for scientific purposes and not for the purpose of affording hundreds of surgeons the opportunity of requesting transportation for themselves, families and friends to enable them to gratify their junketing and pleasure seeking proclivities.

The future of this Academy must be apparent to every one within hearing of my voice, when we consider that this gathering together of so many eminent surgeons, is but the fruition of a few weeks' work of our committee. Certainly, it is evident that the great sheet anchor of our success (the managers) have seen and appreciated the untold benefits that may be derived from the conscientious work of an organization like the American Academy of Railway Surgeons in the working out of scientific problems growing out of the operation of railroads.

The practical feature of this Academy in limiting its membership to only active workers and writers has received several very commendable comments from general managers; they agree with us that a smaller number of active workers will accomplish much more good than a large number of lookers on. That this Academy will advance the standing and science of railroad surgery is a certainty. It requires but a glance about this hall to behold many eminent surgeons, who, by their standing and support of the railroad they represent have this day founded one of the most respected and honorable surgical societies in this country. The character of our program proves very conclusively the distinction I have given you; its business-like expression having superseded notices of excursions and junketing trips, which have been the great drawing cards heretofore.

In conclusion, I desire to impress upon your minds the great importance of a loyal spirit toward the company you represent, as well as its employes. Secure full and accurate statements of facts in all cases of accidents. Avoid useless recommendations to your managers; and more particularly should we have a care not to allow our political ambitions or desires for self-aggrandizement to dominate our better judgment, but constantly bear in mind that this Academy is organized for the sole and express purpose of promoting our special scientific work, first, last and all the time, and thereby demonstrate to our companies its practical usefulness.

A SYMPOSIUM ON PERMANENT ORGANIZATION.

was given by DR. HARVEY REED, Consulting Surgeon, B. & O. Railroad, Columbus, Ohio.

In the permanent organization of any society or association, every factor effected by such an organization should be carefully considered. Among some of these factors may be mentioned: 1, objects; 2, the methods of accomplishing the desired end; 3, those effected either directly or indirectly by such an organization.

In the address presented by Dr. Cole, you have learned that the objects of the American Academy of Railway Surgeons are: 1, the clinical and scientific study of railway surgery; 2, the careful consideration of the medico-legal questions arising out of the railway service; 3, the consideration of such sanitary and hygienic problems as may effect directly or indirectly the railway companies.

No one can deny the practical importance of the objects proposed by the Academy, and that the carrying out of the same will result in "the higher order of railway surgery," which guarantees a corresponding protection to the employe, passenger and company.

The railway service of modern times has gradually changed from an amorphous condition to that of crystallized precision, and depends for its success upon system and exactness in all the details of the service.

It has been found necessary to have a head to every department, and those employed in each department should be well qualified for the duties devolving upon them in carrying out the work assigned to them. The better they are qualified, the better service they can render the company, and the better service rendered the company the greater the earning capacity is increased on the one hand, and the less expenditures on the other.

I.—THE DESIRED END OF ORGANIZATION.

It has seemed strange, and we might almost say paradoxical, that the surgical service should be among the last departments to undergo crystallization. Yet it is an undeniable fact that the progressive railway companies of this country have discovered that the maintenance of a well-organized surgical service is a valuable department to the company. They have learned that while it does not represent earnings, it protects earnings after they are secured and, as the old adage goes, a dollar saved is equivalent to a dollar earned.

II.—THE METHOD OF ACCOMPLISHING THE DESIRED END.

It is not only necessary for the Academy to have grand practical objects in view, but it is equally important that the methods adopted for carrying out these objects should be carefully, conscientiously and impartially considered. In maturing plans for the permanent organization of the Academy, it has not only been advised by many of the leading surgeons who have had long experience in the service, but recommended by many of the managers, that the Academy be limited in numbers and the same be confined to surgeons of practical ability, either as experienced surgeons or eminent

observers and writers on railway surgery, forensic medicine or sanitary science.

It has long been demonstrated, that in order to accomplish the greatest amount of work in a certain direction, it is necessary to limit the number who undertake the work and make the responsibility on each one proportionately greater. For instance, the railway companies do the large bulk of their important business through their general managers, who not only have experience but are held responsible for grave trusts that involve millions of dollars, which if left to the stockholders to manipulate would result in financial disaster. For this reason the railway management argues, that in order for the proposed Academy to accomplish the greatest amount of benefit to the company they represent, it can be done best by an association, such as is proposed, of a limited number of energetic practical workers who will meet from year to year, to consider and discuss the many important problems that are daily manifesting themselves in the general surgical service of the companies they represent.

The question as to how the membership of the Academy should be selected and maintained was one of no small importance, and, I can assure you, one which was not easily solved. At first thought, a delegatory system would seem to strike the mind most favorably, but when we come to consider this system in its details, the question arose as to who should select the delegates. If this could be settled satisfactorily, then a still greater obstacle presented itself, and that was the continual change of membership of the Academy from year to year.

For example, if we were to base our membership upon one delegate for every ten railway surgeons in the United States, we would at once have an eligible membership of about five hundred. We could not expect the same delegate to return from year to year, and if the company, or chief surgeon, or local surgeons from which the delegates are selected, were to attempt to act impartially and give each of their staff an opportunity to attend an annual meeting, you will at once see that with each annual meeting a new set of delegates would appear and that, under this system a delegate would only be able to attend a meeting of this character once every ten years. This being a fact, you can readily see how it would interfere with the interest on the part of the delegates, saying nothing about their ability to accomplish the highest scientific work possible.

After discussing this question in all its phases, your committee thought best to select a nucleus for the Academy, consisting of surgeons who were believed to be worthy and well qualified in carrying out the arduous task proposed by the new organization, and that in doing so they should be made permanent members, not only in order that they would have a permanent interest, but that it might enable them to accumulate knowledge which, with each year, would increase their value, not only to the Academy but to the railways they represent and railway surgery at large. Firmly believing that this plan will render the best service, a skeleton constitution which we have already referred to has been prepared with this idea in view, and it is left to you, gentlemen, to say what the limit of membership shall be and to fix the standard of admission.

III.—THOSE AFFECTED EITHER DIRECTLY OR INDIRECTLY BY SUCH AN ORGANIZATION.

In adopting the fundamental laws of the proposed Academy, we must not be unmindful of those who will be affected by the same. We must remember that not only those who may be selected as Fellows of the Academy will be benefited or injured by our fundamental laws, but our fellow-surgeons and co-laborers, as well as the management of the railroads, will be affected for good or evil by the constitution which we may adopt. Our standard of admission should be high and the limit of our membership low. Every candidate who applies for admission should be carefully scrutinized before taken into fellowship. This would of necessity require us to take into consideration, not only what benefit the admission of such a candidate would exert on the Academy, but to what extent he would benefit the railroads which we are supposed to serve to the best of our ability in the capacity of railway surgeons.

Our fundamental laws should be of such a character as to exclude all actual drones and simple ornaments from our midst. It should encourage the admission of honest workers who will not only be willing but eager to meet with the Academy from year to year, and assume any duties that may be assigned them which they may be capable of carrying out. We must remember in the adoption of our constitution that we are on trial and that our success, our prosperity, yea, our right to exist, will depend on the character of our work and the fruits of our labors. While sociability should contribute its benefits to the members of our Academy, our highest aim, first, last and all the time, should be the constant advancement of railway surgery by a continued endeavor to simplify its technique and solve its mysteries and thereby contribute a liberal benefit to the companies we represent.

We trust that the few hints we have thrown out in this symposium will aid the members of the Academy in adopting a constitution which will not only be simple, but practical, and which will contain the greatest number of good with the least number of objectionable features possible, and that in the consideration and adoption of these laws each Fellow will keep in view the fact that "the higher the order of railway surgery, the greater the protection to the employe, the passenger and the company."

DR. W. H. ELLIOTT, Chief Surgeon, Georgia Central Railroad, Savannah, Ga., who was on the program to open the discussion on the three previous papers, being detained by a railroad wreck, the discussion of these papers was postponed until later in the session. On the arrival of Dr. Elliott, the matter was again referred to by the following remarks:

Mr. President and Fellows of the Academy:

The objects and aims of this Academy should be to advance the science of railway surgery. True devotion to the attainment of knowledge and its successful application in the practice of our art, are the only means by which we can obtain this end. Devotion to science must be paramount to the gratification of personal ambition. Honors in this Academy must come unsought.

Nothing must be said or done which will reflect upon or injure the National Association of Railway Surgeons, because we are still members of that body and fellow-members in the medical profession, and the injury of one is the injury of all. No discussion with the National Association or its members in regard to this Academy is necessary or desirable. Arguments might become heated, and while failing to convince, would most probably result in injury to the cause of railway surgery. A success of the Academy at the expense of the National Association would be temporary only, and would finally end in lowering the esteem in which the Academy and railway surgery is held.

Nothing must be done in the Academy which is not open to inspection or which is in any way calculated to make a false impression. Nothing can succeed in the long run but noble and high aims founded upon truth and justice. Our motto calls on us to be true to our profession, to our patients, and to the railway companies we serve.

"This above all; to thine own self be true;
And it must follow, as the night the day,
Thou canst not then be false to any man."

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:
PER ANNUM, IN ADVANCE $5.00
SINGLE COPIES . . . . . 10 CENTS.
Subscriptions may begin at any time and be sent to
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 86 FIFTH AVENUE, CHICAGO, ILLINOIS.
W. H. LOWDERMILK & CO., WASHINGTON AGENT.

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SATURDAY, JANUARY 5, 1895.

THE ALLEGED BACILLUS OF BILIOUS FEVER.

The medical world has heard but little of the bacillus of bilious fever. The *éclat* which attended the recognition of the spirillum of cholera and the bacillus of tuberculosis was not extended to the recent announcement of DR. DOMINGOS FRIERE, of a bacillus similar to that of TOMMASSI-CRUDELI in the bilious fevers of hot climates. Yet locally, in the place of its origin, this announcement created such a disturbance in the medical atmosphere as to agitate not only the professional but the daily press; and this because in addition to the intrinsic importance of the alleged discovery, the question was incidentally raised of the value of FREIRE'S inoculations with attenuated cultures in immunizing against yellow fever. Many letters were published, copies of which are now before us, from which we outline in a suggestive way the manner in which the announcement was received in Rio de Janeiro. It appears from these that PROFESSOR FREIRE has found the plasmodium of LAVERAN in some cases of malarial disease, but regards this organism as a result in the blood of the action of the bacillus which he has just discovered.

Three medical men, two of them former pupils of PROFESSOR FREIRE, and all of them at one time his disciples and admirers, visited his institute to verify the existence of the bacillus. They were DRS. CHAPOT-PREVOST, OTTONI and FAJARDO, the first, Professor of Histology of the Faculty of Medicine of Rio de Janeiro, the second his assistant, and the third, physician to the yellow fever hospital. As a result of their visit, DR. CARL SEIDL, Director of the San Sebastian Fever Hospital, published an invitation to PROFESSOR FREIRE to submit his cultures and methods to a commission of competent men to be named by the medical faculty, stating that men of this kind whose competency and impartiality were above suspicion were as easily to be found in Brazil as in Europe, and charging him as follows:

1. That he had no pure culture of the alleged bacillus in his laboratory.

2. That to mitigate the disappointment of his visitors he allowed them to examine a microscopic preparation (with a cracked cover-glass) from an impure culture.

3. That a kidney slice from an infected guinea pig, referred to in his publication as showing the bacillus, presented only purple stained nuclei of cells of connective tissue which had been christened bacilli.

4. That his assistants vaccinated with a culture which he, FREIRE, said *ought* to be pure.

5. That on examining this culture it was found that the defects of the cover-glass had been considered by him as qualities of a pure culture; and that below this was a mixture of sprouts and infusoria, which mixture served for his vaccinations.

PROFESSOR FREIRE in reply held his position to be established by his visitors' own acknowledgment that they had seen a culture; that on account of the technique he had employed (described by CORNIL) the purple objects in the kidney slice could be nothing but bacilli; he laughed to scorn the idea that flaws in the cover-glass had been photographed as bacilli; but made no reference to the invitation to submit his work to a commission. CHAPOT-PREVOST, who is a pupil of EHRLICH of Berlin, retorted that neither he nor his friends had seen a *pure* culture, and that the students in his histologic class will show to any one in the normal kidney of the guinea pig, purple stained nuclei obtained by the processes used by FREIRE in preparing his kidney section; and again and again is the Professor urged to demonstrate the existence of the bacillus before a selected committee, so that in the sixteenth letter of the series now before us he at last disposes of the invitation after this manner: "I am not his pupil to be at his caprice nor is he my superintendent. It would be against my dignity as a professor of a faculty to be giving explanations to whoever demands them, about an elementary manipulation of a bacteriologic process which every apprentice ought to know."

Naturally, in the course of this discussion, the participants digressed to the micrococcus xanthogenicus. FREIRE attributes all the opposition to his discoveries to a clique who, not content with spreading their detractions in Brazil, have endeavored to plant a center of opposition to him in Paris; and he refers to his statistics as establishing the value of the "vaccinations" for yellow fever. SEIDL replies that these vaccinations have been in progress since 1883 and yellow fever continues, becoming year by year

more formidable and destructive, instead of being gradually stamped out as was prophesied by FREIRE. Statistics will never convince the bacteriologists of the world, the medical fraternity of Brazil, nor the public, of the value of these vaccinations. "For where is the physician, where is the intelligent man in this town, who does not know cases and cases in which said vaccination was not only useless but perhaps harmful because it caused a false confidence?" In the laboratories of Paris, Vienna and Berlin are long series of pathogenic germs, some only recently announced, yet there is no culture of the xanthococcus which has been discovered for so many years and put to practical account in Rio. OTTONI challenges PROFESSOR FREIRE to name one laboratory, not his own, in which the xanthococcus has been verified as the cause of yellow fever; and the suggestion is made that since we have waited so long for the verification of this microbe we may have to wait a considerable time for a pure culture of the bacillus of bilious fever.

The last letter of the series, number twenty, by DR. SEIDL, closes with this reference to the invitation for an investigation by competent men: "And the committee of experts will wait for the Greek Calends?"

FLECHSIG'S TREATMENT OF EPILEPSY.

The treatment of epilepsy has always been surrounded with many difficulties. The disease itself is symptomatic, presenting a most varied pathology, from that of a functional neurosis to those graver conditions involving organic degeneration. Such being the case it is apparent that any method of treatment must have only a limited range of application. Undoubtedly, the greatest successes are reached in this disease along those lines which improve the general nutrition of the body and thus render more stable the nerve cells concerned in the production of the attacks. There is no disease which more certainly affirms that we should beware of the single remedy, or of one method. While the bromid treatment is perhaps more generally successful than any other, yet it can not be followed as a routine practice and it is not adapted to more than one-half of the cases that are actually met with in practice.

Recently, COLLINS (*Medical Record*, Sept. 22, 1894) has studied the method of FLECHSIG in the treatment of some forty cases with, he claims, excellent results. The method consists in the administration of opium beginning with a dose of 1 grain after each meal, and increasing until 10 to 12 grains are given during the course of the day. This treatment is persisted in for about six weeks and is not usually followed by any reduction in the number of the attacks. Some patients complain of the effects of the opium but this is overcome to a great extent if the patient takes a good deal of physical exercise, and free catharsis is employed. At the end of six weeks the opium is abruptly discontinued and comparatively large doses of the bromids are given. This in a majority of instances is followed by a marked diminution in the number and severity of the attacks, and improvement in the general mental condition of the patient. The bromids are then rapidly diminished until a small dose is reached, or else they are discontinued altogether according to the condition of the patient.

Some of the cases reported by COLLINS were those of epileptics who had been under the bromid treatment with very unpleasant results, but after the use of the opium the bromids were well borne. The method seems to give the best results in those severe cases dependent upon organic changes in the brain and vessel walls, precisely those cases in which other methods have so signaly failed. A number of cases of idiopathic epilepsy have done exceedingly well under this treatment, but not so much is to be looked for in this class of cases.

REVIVAL OF A SIXTEENTH CENTURY SUPERSTITION.

The fasting girl and trance states furnish the greater number of medical newspaper sensations, but this was varied on December 26 by the appearance of an article in the Chicago *Evening Post*, under the following startling headline: "He resembles the image." The article which is a dispatch from Jamestown, N. Y., goes on to say that one GEORGE W. DEPEW, has been arrested for the murder of MRS. WINSLOW SHEARMAN and her daughter MRS. CLINTON. He has been identified by his resemblance to an image of a man seen in MRS. SHEARMAN'S eye. The dispatch then goes on to state that the discussion over the possibility of identifying a murderer by the image left on the retina of the victim's eye has been revived with great intensity. Versimilitude is given the narrative by the statement that, "those who saw the image before it was blurred by removal of the eye from the socket, remember the image so distinctly that they could identify the general outlines of the man's figure from it and the half profile revealed in the image. Before the removal of the eye the image was sharply defined." If there is still a lingering doubt in any one's mind regarding this statement it would be swept away by the following: "Even the wrinkles in the clothing were plainly seen by the aid of the microscope."

All through the Middle Ages there was a belief that the eye of a murdered person contained an indelible impression of the last scene upon which he looked. In the jurisprudence of that time there are cases recorded of conviction upon such evidence. It, however, was never received with as great favor as was the touching of the dead body by the suspected

person, to learn if the wounds would bleed afresh, in which case guilt was held to be fully established. The theological element figured in this latter test, just as it did in that of the ordeal of battle.

It must be very comforting, in these *fin de siecle* days, to those who have an abiding faith in the good old times of the fathers, to have a story of this kind follow upon the heels of an outbreak of "hypnotism" in a Wisconsin town, allied in many respects to the famous witchcraft episode at Salem.

THE PLEA OF HYPNOTISM IN CRIMINAL CASES.

Undesirable effects of a little dangerous information on medical subjects on the part of the public are frequent enough, and indeed too common to usually call for special remark. When, however, a wave of mental aberration seems to be going over the country, and on a subject that comes especially within the purview of a medical journal, it would be unpardonable to let it pass unnoticed, the more so when the evil is in part due to the encouragement given by an unscientific credulity on the part of members of our profession, regular and otherwise.

Within the past few weeks the plea of irresponsibility for capital offenses on account of hypnotic influence, has been raised in two prominent instances, and in at least one other case it has been successful. This is not a new mode of defense. It formed one of the most prominent features of the celebrated EYRAUD case, tried in France two or three years ago, but the homicide MCDONALD, of Wichita, Kan., is apparently the first one who has successfully availed himself of it. The precedent has been set, and the possibilities for this plea in the future are indefinite.

While one may admit that a somnambulist *may* irresponsibly commit a homicide, and that the actual condition of hypnotism is a sort of induced somnambulism, the possibilities of miscarriages of justice in applying this to criminal jurisprudence are too great to be ignored. There is not merely the chance of a murderer escaping by this plea, but there is even a greater possible danger to innocent parties from false accusation. This is well illustrated in the PICKIN case in Wisconsin, now exciting so much popular interest. Whether or not there is any basis of fact in the charges, the range it opens to hysterical accusation is sufficiently obvious.

The responsibility of the regular medical profession in this matter is a very large one. It is not probable that any man can be convicted or acquitted on a plea of hypnotism without the testimony of physicians, and how many are there who have well founded and scientific opinions on these subjects? It is to be feared that the number is by no means so great as it should be, and that the credit of medical testimony will suffer in consequence. The views in regard to hypnotism of some men who ought to know better, are wild enough; with some it has reached the evil eminence of being a fad, and there seems to be no limit to their credulity.

It is astonishing how little real advance there has been in our discussions of this subject, and how sensible were the views of many of the earlier alienists of this country and abroad in regard to it. One need only read a work published in the early forties by Dr. J. W. GALT, of Virginia, and which, with the exception of RUSH's work, was the earliest important contribution to psychiatry in this country, to be convinced of this fact. The later literature of hypnotism, with the exception of a few important contributions, is to a great extent a waste of human effort and largely a monument of human credulity.

The object of these remarks is to call attention to the medico-legal importance that may become attached to the subject, and to emphasize the need of a proper cautious scientific spirit on the part of our profession in dealing with it. It has other phases perhaps not less important in their way, such for example as the effect on public health of the practices now prevalent; but that, as MR. KIPLING says, is another story, and may be dealt with hereafter.

SMALLPOX IN 1894.

After all the space given to the subject in the public press, concerning the "ravages of the loathsome pestilence," it appears that there were only about ten thousand cases of smallpox, with not to exceed three thousand deaths, in the United States during 1894. Compared with the constant mortality from consumption, pneumonia, diphtheria and other contagious or infectious diseases—more or less preventable—it is apparent that smallpox has lost its epidemiologic significance for this country almost as fully as has Asiatic cholera or yellow fever. There may from time to time occur an outbreak of either of these latter diseases; but there is reason to believe that the terrors which cholera caused during the middle third of the century, and yellow fever for more than a hundred years, will never again be repeated.

The prevalence of smallpox in 1894 has been pithily called "the lesson of neglected vaccination." But while this is, in a certain obvious meaning, an apt characterization, there is also an optimistic lesson in the figures which should not be overlooked. One hundred years ago (JOHN SIMON) there were 96 deaths from smallpox out of every 1,000 deaths from all causes. At our average annual death rate (J. S. BILLINGS) of 18 per 1,000 there were 1,170,000 deaths from all causes last year in a population of 65,000,000. One hundred years ago, therefore, we should have had 12,300 deaths from smallpox last year instead of less than three thousand.

That this latter number is wholly unnecessary is true; but the difference between what is and what might have been, but for JENNER, is another laurel for his centenary next year.

CORRESPONDENCE.

The Erysipelas Toxins—A Reply to the Editorial of Dec. 15, 1894.

NEW YORK, Dec. 20, 1894.

To the Editor:—My attention has been called to your recent editorial upon the "Failure of the Erysipelas Toxins." Coming so soon after a previous editorial upon the *success* of the toxins, I am somewhat surprised, not so much at the radical change of views, as at the change having been allowed to take place without a more careful inquiry as to the present status of the treatment and a more critical analysis of the evidence presented.

The statement is made in your editorial: "There is no longer much question of the entire failure of the toxin injections as a cure for sarcomata and malignant growths. During the past six months the alleged remedy has been faithfully tried by many surgeons, but so far not a single well authenticated case of recovery has been reported, so far as our reading has extended, and the personal experience of surgeons of our acquaintance with whom we have conversed, demonstrates that in all cases in which they have tried the erysipelas toxin the result was no improvement." It is further stated: "We should not accept as conclusive, reported cures by any investigator, no matter how prominent. We should demand that these cases be corroborated by other observers making investigations independently."

Fortunately, there is no issue between the editor and myself as to this latter statement; and only such evidence as will stand the rigid tests of scientific demonstration will be considered. This whole dispute, then, resolves itself into the simple question of fact, *Does* or *does not* such evidence exist? I presume the writer of the editorial used the term, "erysipelas toxins," in short for the toxins of erysipelas and bacillus prodigiosus. As I was the first to propose and to carry out this method of treatment for sarcoma, and as I am the only one who has used this method in any large series of cases, it would seem that my experience, stretching over a period of more than three years, ought to have as much weight in determining its value, as the "personal experience of surgeons of the editor's acquaintance," whose observations cover a period of less than six months.

In my paper on this subject presented before the American Surgical Association at Washington, May 31, 1894, I reported the results of twenty-five cases of inoperable sarcoma treated with the mixed toxins. Of these cases, six were successful up to that time. Since that time I have treated thirteen other cases of inoperable sarcoma, with the result of now having ten cases out of a total of less than forty in which there is good reason to hope for permanent cure. These results were reported in a recent paper before the New York Academy of Medicine, Nov. 15, 1894, and will soon be published in detail in the *New York Medical Record*. None of the six successful cases reported at Washington, six months ago, have shown any tendency to relapse. One of my cases has gone three and one-half years. This was a twice recurrent sarcoma of the neck and tonsil, with the patient in a most desperate condition, with no chance of living more than a few months. He had been operated upon by Professor Duranti, of Rome, and Dr. Bull, of New York. The microscopic examination was made by Dr. Farquhar Ferguson, Pathologist to the New York Hospital, and he was frequently seen during the treatment by Dr. Wm. T. Bull, Professor of Surgery of Columbia College.

Two other very extensive inoperable cases have now gone nearly two years without recurrence. Both cases were treated at the New York Cancer Hospital, and the diagnosis confirmed not only by Dr. Bull and other surgeons but by careful microscopic examination by the leading pathologists of this city. Both of these cases were presented Nov. 15, 1894, at the Academy of Medicine, in perfect health. Another case that has now gone more than one year, a large inoperable sarcoma of the abdominal wall, was sent to me by Dr. Maurice H. Richardson, of Boston. I will quote Dr. Richardson's own words taken from the discussion and found in the Transactions of the American Surgical Association, 1894: "In this case there was no doubt, according to accepted methods of diagnosis, that the woman had a malignant and necessarily fatal disease. The mass filled the right lower quadrant of the abdomen. When I operated I first incised in the median line and came down on the tumor. I then made an incision in the lateral region with the same result. There was nothing to be done surgically. I took out a section and had it examined. It was pronounced sarcoma. The patient was sent to New York in October. In May there was not the slightest sign that could be detected. Unless the diagnosis was entirely wrong; unless the history, gross appearances and microscopic examination were entirely wrong, there was a case that would have died sooner or later." I will add that the microscopic examination was made by Dr. Whitney, Professor at the Harvard Medical School, whose reputation as a pathologist and microscopist ought to be sufficient guarantee of the accuracy of the diagnosis.

Space will not permit me to go further into detail, but in all of my cases the diagnosis was not only established by eminent surgeons, but confirmed by microscopic examinations of competent pathologists. Such evidence as this I claim to be *scientific*, in the strictest sense, and it can not be lightly dismissed as inconclusive because reported by a "single investigator."

In closing, I will say that the editor's demand that "these cures be corroborat d by other observers" has already been completely met. The report of a very extensive sarcoma of the palate and pharynx, successfully treated by Dr. Walter B. Johnson, of Paterson, N. J., may be found in the *New York Medical Record* of Nov. 15, 1894, and four other successful cases in the hands of different surgeons throughout the country who used the mixed toxins, prepared and made under my direction (from cultures originally obtained from a fatal case) will shortly appear, with the publication of my paper.

In my previous paper (*loc. cit.*) I stated that cultures obtained from any but a very virulent case of erysipelas were of little value, and furthermore that all of my successful cases had been treated with toxins made from cultures obtained from a fatal case of erysipelas. Fully recognizing the importance of caution and conservatism in a matter of such grave import, I refrained from publishing my results, not only until I had a sufficient number of cases, the diagnosis of which was beyond question, but until sufficient time had elapsed to prove the permanency of the cure.

That a few physicians, in a very limited number of cases, with indifferent preparations of the toxins, have failed to obtain good results will not, I am sure, have great weight in the minds of the scientific portion of the profession, in determining the failure or success of this method of treatment of sarcoma. Very truly yours,

WILLIAM B. COLEY, M.D.

The Treatment vs. the Abortion of Typhoid Fever.

YOUNGSTOWN, OHIO, Dec. 24, 1894.

To the Editor:—During the past year you have published four papers on typhoid fever, which I had read before the Mississippi Valley Medical, the AMERICAN MEDICAL and the Mahoning County Medical Societies. Those papers were all written for one object,—to prove that typhoid fever can be aborted—a difficult enough task surely; without wasting much time in giving details of a treatment which I did not suppose many would care to try until very conclusive evidence of its efficacy had been presented, but although, some physicians have secured most brilliant results from the treatment by relying on these published directions as their only guide, I fully recognize their inadequacy and have always intended to write a treatise on the abortive treatment of typhoid fever, as soon as there seemed to be a demand for it.

Since the publication of my first paper in February last, I have received many letters asking for exact details of my method of aborting typhoid fever, but I do not find the name of Dr. W. S. Caldwell of Freeport, Ill. He must therefore have obtained his whole knowledge of this important subject from one or more of these incomplete papers written for an entirely different purpose. Yet he published a letter in the JOURNAL of the 15th inst., in which he confesses his inability to succeed with a treatment of which he must necessarily know so little. Immediately on receipt of the JOURNAL containing his criticism, I wrote him the following polite letter:

YOUNGSTOWN, OHIO, Dec. 15, 1894.

MY DEAR DR. CALDWELL:—Presuming that the object of your letter in the current issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is to "seek for the truth," and believing that if put in possession of all the data at your disposal, I could not only show you why you failed to secure the results which my charts show are possible, but how you may obtain even better results than I have had, because my work has been done under difficulties and I have made many mistakes which you could avoid.

Will you therefore give me the necessary information by answering the inclosed list of questions:

1. How many cases of typhoid fever have you treated by my method?
2. On what day of the disease did you begin the treatment of each case?
3. What was each patient's condition when the treatment was begun?
4. What was the exact formula used in each case?
5. What was the size of doses given?
6. How often were they given during the first six days?
7. What other medicines were given besides those advised by me?
8. What was the daily morning and evening temperature?
9. Give the pulse record.
10. How many times did the bowels move each day?
11. How soon after beginning treatment did the tympanitis disappear?

And add any further information that you may possess about them. Will you also send me samples of the remedies you used, or if this is not possible give me the name of the druggist who prepared them for you, so that he may send me sample on order?

Hoping to hear from you at once, I beg to remain, my dear sir, Most respectfully yours,

JOHN ELIOT WOODBRIDGE.

P. S.—Should you have other cases of typhoid fever and will telegraph me, I will go to Freeport free of cost to your patient or yourself, and show you how to shorten the course of the disease to less than two weeks and how to save the life of every patient.

This letter he probably does not consider worthy of his attention, as more than a week has elapsed and I have received no answer. His published letter is therefore the only measure I have by which to judge of his ability to treat a case of the disease which he truly designates "terrible."

First, he says I have published . . . . *"in several medical journals."* . . . . This is not true. I have never published a paper on typhoid fever in any journal, magazine or paper, except the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. One paper was published in the Transactions of the Ohio State Medical Society.

. . . . *a "paper"* . . . . So he probably has seen but one of my five published papers on the subject, and he does not say which one.

He next errs by calling a paper or series of papers, written to prove that typhoid fever can be aborted. . . . *"paper on the treatment of typhoid fever."* Notwithstanding the fact that less than two and one-half of the sixty pages, refer to treatment. He says: *"The first part of his prescription"* (by which he evidently means—first prescription)—*"containing"* . . . . *"guaiacol."* Is this only an inaccuracy, or does Dr. Caldwell not know the difference between "guaiacol" an acrid, poisonous, oily liquid and guaiacol carb., a white, crystalline non-poisonous salt?

It would be unreasonable to suppose that Dr. Caldwell would write with less care or less accurately for the thousands of readers of the JOURNAL than he would for his druggist. Therefore judging his prescriptions by his published criticism we are justified in giving expression to some surprise that *"his vigorous young woman"* was in condition to have a temperature of 105 degrees F. after *"two weeks trial"* without taking into consideration the fact that she was subjected to at least three different methods of treatment, viz., the Brand or bath, the Woodbridge, and the compromise or sponge treatment.

Without taking the trouble to criticize the remainder of this letter, it seems clear that if others have tried my abortive treatment of typhoid fever with no better preparation and as carelessly as the Doctor's letter would lead us to suppose he conducted his experiment, then we shall probably hear of other failures as dismal. We shall undoubtedly hear, too, of some successes, and one brilliant success should outweigh an hundred failures in estimating the value of the treatment. The failures may be due to inert or impure drugs, to carelessness or want of skill in compounding them, to their improper administration or even to the administration of other remedies interfering with their action. Thus the physician who prescribes, the nurse who administers, the druggist who dispenses, or even the pharmacist who manufactures the remedies, one or all of them may contribute to the failure, making that but at best a negative evidence, while a single well established success puts the stamp of value on the treatment. The gun that speeds the bullet true to the mark in one hand, if equally well charged and truly held, will do so in every hand, but if the powder be poor, the bullet untrue, or the hand that holds the gun unsteady, no matter how accurate the weapon may be, the bullet may be expected to fly wide of the mark.

Respectfully yours,

JOHN ELIOT WOODBRIDGE, M.D.

Treatment of Typhoid Fever.

COLUMBIANA, OHIO, Dec. 25, 1894.

To the Editor:—In response to the physician who has been using Dr. Woodbridge's treatment for typhoid fever and has not met with the success he had hoped for and that Dr. Woodbridge had assured him he would meet with; and to all who would try it, I desire to say that I have been carefully testing it for the past three months, and so far it has proved very successful in my hands. In that time I have had an unusual number of cases of typhoid fever. Not being satisfied with the old method of treatment, I was induced to try the plan proposed by Dr. Woodbridge. Some of my cases presented unusually severe symptoms, temper-

ature ranging as high as 105.5. While I was not able to abort it entirely in all of my cases, yet the temperature was materially reduced in a very short time, the fever ran a very mild course and my patients were soon in a convalescent stage.

I find this treatment must be employed early. In one or two cases I used other measures first; finding they did not accomplish the end desired, I then adopted the Woodbridge method after a delay of a day or so. In these cases my results were not so good as when I used his measures first. Perhaps the physician who says he practices very conservatively, failed to use the measures early enough to abort the disease, and thus became discouraged with the remedy. If this gentleman, and others also, will give the method a fair trial, using the treatment early and calling Dr. Woodbridge in consultation in the severer cases, allowing him to explain more fully his plan of treatment, I think the results will be more satisfactory. Yours fraternally,

C. R. JUSTICE, M.D.

MERCED, CAL., Dec. 27, 1894.

To the Editor:—Replying to Dr. Caldwell, will say I have tested the antiseptic treatment of Dr. Woodbridge sufficiently to convince me of its great value. I have been unable, so far, to carry out this treatment *exclusively* from beginning to end of case, for various reasons, but the results obtained in the way I used it, convince me of its superiority. Then it appeals to the *reason;* it not only destroys the bacilli but carries them off, and by giving large quantities of water we have an (almost) antiseptic irrigation of the tniestines. W. N. SHERMAN, M.D.

The Practical Importance of Well Established Facts in Therapeutics.

To the Editor:—Dr. N. S. Davis puts the questions: If alcohol when taken into the living body directly diminishes nerve sensibility, muscular force, and so alters the constituents of the blood as to retard both the internal distribution of oxygen and natural tissue metabolism in direct proportion to the quantity to be taken (the established fact according to Dr. Davis), why do we continue to speak and write concerning it, or to use it, as a *stimulant*, *heart tonic* or *restorative agent?* The answer seems to be that experience proves that we are right in spite of the supposed established facts.

Let me briefly illustrate: In the year 1870 I started to walk from Courmayeur to Chamounix via the Col du Géant, a climb of 10,000 feet and a march of some six or seven hours over the Mer de Glace. I arrived at the summit of Col between 9 and 10 o'clock A.M., and after resting one hour for breakfast, commenced the descent. At this hour the heat was intense, and the motion of walking on the glacier was as irregular and uncertain as on board a ship. I was seized with mal de montaigne, vomiting, diarrhea and nervous prostration exactly similar to similar experiences at sea, and I lay down for an hour and slept, but no sooner did I begin to walk than the vomiting returned. My guides and porter made a *chaise á porteur* of their staves and alpenstocks. They essayed to carry me, but the motion of their movements was even worse than that of walking and the attempt was given up. With the prospect of being benighted on the ice I then sent on two men to Montainvert with instructions to return as quickly as possible with wraps, fuel, restoratives and other requirements for passing the night in safety. In the meantime I struggled on for a few yards at a time, until at last even a few steps brought on such prostration that I was compelled to stop. My condition became alarming, my face was deathly, I was pulseless, my hands and feet cold and I was quite unable to rise; and my friends covered me up in shawls, chafed my hands and did their best to maintain my circulation. We were waiting most anxiously for the return of my men with the necessary restoratives, when we were accosted by an Irish gentleman on his way to spend the night upon the glacier with the object of climbing one of the neighboring peaks to see the sun rise. He saw and diagnosed my case. He took out his flask of brandy and in the course of fifteen minutes gave me fully half a pint without a drop of water. Within another ten minutes I got up and shook myself and declared my ability to walk. I boasted of having on a pair of brandy boots. I walked forward without a trace of nausea, crossed the "Mauvais pass" without assistance or mistake, and arrived at the Hotel Montainvert after three hours hard walking, and after a long sleep awoke to eat the heartiest breakfast of my life. It is safe to say that the sensibility of my nerves was not reduced, that the distribution of oxygen was not retarded, that the natural tissue metabolism was not interfered with. On the contrary, my nerves were stimulated, my heart action was excited and my whole body and muscular system was raised to a condition wonderfully like health.

Let me give one more personal experience: Just eleven years ago I had been greatly overworked and had lost much sleep. I was in close attendance upon a patient who died from pneumonia of a most malignant type. I paid him a long visit a few hours before his death and although boasting to a friend of my perfect health I remarked on getting into bed that I felt a curious sensation in my right loin as though I had suffered from a blow. I slept well but next morning the pain returned. Then cough, hemoptysis, rapid pulse. Temperature 104 degrees and in twenty-four hours all the symptoms of double pneumonia were manifest. At the age of 62, with an intermittent pulse the prospect was not flattering. On consultation, alcohol was the remedy prescribed. I took half an ounce of brandy or whisky every two hours. The pulse became regular and the symptoms slowly declined. I took the dose religiously for nine days and my recovery was perfect. I am to-day in my seventy-fourth year. Only a few weeks ago I climbed 3,200 feet in three hours and a quarter, without the least distress, and the day afterward walked for at least seven hours. I do not remember the time when I have not been accustomed to drink wine with my meals. For over fifty years I have drank wine every day, and I may say truly in the last forty years I have not willingly drank forty glasses of cold water to allay my thirst. After such personal experiences, (and indeed I can relate even more startling results in the case of patients) I may surely be pardoned in doubting the apparent facts which Dr. Davis regards as well established.

Yours very obediently,

J. H. STALLARD, M.B. Lond., M.R.C.P., M.R.C.S.,
and late Physician to the San Francisco Polyclinic.

PUBLIC HEALTH.

Low Death Rate.—Computed on the figures of the school census of April, 1894—which fixed the population at 1,567,727, or 32,273 less than the population of 1893—the death rate of Chicago last year was 15.1 per 1,000. The Health Commissioner, Dr. Reynolds, reports 23,701 deaths from all causes, as against 27,083 during the previous year.

Glanders in Havana.—*El Progreso Medico* states that, while glanders has been known to exist in Havana for years, the unusual number of cases in 1894 ought to attract the attention of the health authorities. The remedy is well known to science, but the authorities either don't know it or won't apply it. It is not grooms alone who contract the disease;

no one is safe from it, and it is often the passer-by who is attacked. *El Progreso* quotes a distinguished veterinary surgeon as saying recently that 10 per cent. of the 15,000 horses in Havana are affected with the disease. It is not surprising, then, that glanders numbers more cases than any other infectious disease in that city. To the cases in private practice must be added those in the Mercedes Hospital; in one ward alone clinical and bacteriologic examinations showed the presence of five cases of the disease from January to August. Dr. Salagridas, who has charge of the ward, says glanders is favorably influenced by both yellow fever and typhoid fever; he has seen three years of the first and two of the latter. The journal cited urges that stables be thoroughly inspected and all diseased animals removed; and points out that in Germany and elsewhere the government, in the interest of public health, pays for horses destroyed, so that owners have no incentive to hide diseased animals; and adds that in really civilized countries human life is held at its true value, but in the present case, while the indifference is general, the fault is in great part due to the authorities. The professional press has sounded the alarm many times, but the danger is as serious and as menacing as ever.

Specific Organisms of Vaccinia and Variola.—The etiology of smallpox is a problem of such interest that any contribution to its study of *prima facie* merit should be brought promptly to the attention of the bacteriologic world. During the past year Mr. J. Christian Bay, bacteriologist of the Iowa State Board of Health, has carried on a series of investigations concerning the specific organisms of vaccinia and variola, a detailed account of which has been forwarded to the *Medical News*. Through the courtesy of the author the JOURNAL is enabled to present a summary of the important points of his paper. During the past thirty years many bacteriologists—among whom the author cites Chauveau, Hallier, Luginbuehl, Beale, Cohn, Weigert, Klein, Klebs, L. Voigt, Pfeiffer, Hlava, Koch, Feiler, Crookshank, Copeman, Rille, Martin, Coze, Feltz, Baudoin, Plaut, Zimmermann, Toussaint, Buttersack, Landmann and Dräer—have investigated the smallpox and vaccine lymph, and some of them have found one or more cocci to which they ascribed the rôle of *causa morbi;* others were of the opinion that animal parasites caused the disease; and a few—*e.g.*, Plaut and Zimmermann for sheeppox—have isolated bacilli of different species, common saprophytic bacteria, none of which seemed to have any causal relation to vaccinia or variola. Plate cultures after Koch's method reveal no organisms in vaccine or smallpox lymph, neither do microscopic examinations. The author prepared test-tube cultures in Pasteur's fluid and in bouillon rendered alkalin with Cl Na; vaccine points were dropped, or samples of smallpox deposited, in the medium under the usual precautionary measures. On the first day after incubation the medium became slightly turbid and, during the second and third days, a grayish, folded, greasy-looking film developed on the surface. Microscopic examination showed the presence of bacilli, measuring 0.6 to 1 μ by 0.2 to 0.3 μ.; they are colorless, motionless and bear one spore at each end of the cell—hence the organism has been referred to Kern's genus *Dispora* and named *Dispora variolæ*. It was found, with three exceptions, in sixty-five cultures from vaccine points and in forty cultures from the lymph of confluent smallpox; two cultures failed to respond to inoculation. The organism is somewhat polymorphous; in old cultures the cells are arranged to a great extent in threads; the dimensions of the cells also vary as above stated. Spores are found being formed at the beginning of the cell development and the number of spores constantly increases as development progresses; in old cultures very few vegetative cells are found while the number of free spores largely predominates. The author is of the opinion that the organisms, cocci, described by others as *Micrococcus vaccinæ*, *M. variolæ*, *Microsphæria vaccinæ*, etc., are identical with the spore stage of his *D. variolæ;* and believes that his observations and conclusions as to the facts of the spread of smallpox warrant the assumption that the spores are the main source through which the disease, itself, as well as vaccinia, is reproduced. Mr. Bay is further investigating the results of inoculations upon animals and experimenting with a view to the preparation of vaccine in the laboratory. It is in this last object that health officers and sanitarians will be most directly interested and hope that Mr. Bay's claims may be substantiated by other investigators.

Summary of Smallpox in 1894.—From reports of JOURNAL correspondents and other sources the following summary of the diffusion of smallpox in the United States in 1894 has been compiled:

Arizona: Nogales, 1 case.

Connecticut: Manchester, Winchester, Canaan, Norfolk, South Norwalk, Waterbury, New Haven, Putnam, Bridgeport; nine places, 52 cases, 11 deaths.

District of Columbia: Washington; 18 cases, 7 deaths—one new case and two deaths, December 31.

Georgia: Atlanta, Senoia; two places, 12 cases.

Illinois: Alton, Aurora, Bloomington, Braidwood, Chicago, Danville, Decatur, Downer's Grove, Drainage Canal, East St. Louis Race Track, Edwardsville, Elgin, Evanston, Freeport, Galesburg, Genoa, Greenbush, Harvey, Havana, Hoopeston, Joliet, Jonesboro, Kingston, Libertyville, Lombard, Maywood, Morris, Paris, Peoria, Rockford, Rock Island, Roodhouse, Round Grove, Spencer, Sandwich, Toluca, Tolono, Upper Alton; thirty-nine places, 3,209 cases, 1,050 deaths; in Chicago, 3.062 cases, 1,029 deaths; in the State *ex* Chicago, thirty-eight places, 147 cases, 21 deaths.

Indiana: Fort Wayne, Kewauna, South Bend, Crown Point, Indianapolis, Fulton County, Marshall County, Pulaski County, Wayne County, Johnson County, Blackford County, Lake County, DeKalb County, Kosciusko County, Whitley County, Grant County, Walkerton; seventeen places and counties; 105 cases, 17 deaths.

Iowa: Tama and six other places.

Kansas: Atchison; 44 cases, 9 deaths.

Kentucky: Louisville, Paducah; two places, 20 cases.

Louisiana: New Orleans; 5 cases, 1 death.

Maine: Kennebec, Bangor; two places, 3 cases, 1 death.

Maryland: Baltimore, Glymount; two places, 9 cases.

Massachusetts: Boston, Chelsea, Springfield, Worcester, Lawrence, Yarmouth, South Boston, Lynn, Waltham; nine places—182 cases, 30 deaths in Boston.

Michigan: Otsego, Crystal Lake, Otsego Tp., Menominee, Ishpeming, Kalamazoo, Jackson, Marquette, Bay City, Muskegon, Grand Rapids, Sturgis, Napoleon, Summit, Detroit, Allegan, St. Joseph, Flint, Frenchtown Tp., Farmington Tp., Ridgeway Tp., Berlin Tp., Ypsilanti, Pontiac, Macomb Tp., Clayton Tp., Manchester, Rivers Tp., Norvill, Cheboygan, Royal Oak, St. Johns, Sewaba Tp., Adrian Tp., Danby Tp., Watersmeet Tp.; thirty-six places, 180 cases, 41 deaths.

Minnesota: St. Paul, Duluth, Two Harbors, Red Clover Tp., La Crescent Tp., Belle Plaine, Brainerd; seven places, 29 cases, 3 deaths.

Missouri: St. Louis, Mountain Grove; two places, 21 cases, 2 deaths.

New Jersey: Hoboken, Jersey City, Newark, Paterson; four places.

New York: New York city, Brooklyn, Red Hook, Tivoli, College Point, Walworth, Manchester, Ontario, Yonkers, Utica, Sing Sing, Palmyra, Rochester (near), Geneva, Ithaca, Mt. Vernon, Stapleton, Salina, Newburg, Port Jervis, Nelsonville, Binghamton, Wayne County, Syracuse, Schenectady, U. S. revenue cutter *Manhattan*, five ocean steamers at quarantine—one on December 31; twenty-six places, 1,690 cases, 442 deaths.

Ohio: Springfield, Columbus, Lima, Dayton, Worthington, Toledo, Cleveland, Deerfield, Cincinnati; nine places.

Pennsylvania: Oakdale, Jeannette, Maconaqua, Reading, Fritztown, West Leesport, Gibraltar, Friedensburg, Mechanicsburg, Carlisle, Wilton Grove, Pittsburg, Williamsburg, Tyrone Forges, Elk Co., Williamsport, Philadelphia, Shamokin, Dagus Mines, Riverside, Danville, Lee, Shickshinny, Muncy, Lewistown, Jerseytown, Harrisburg, Lewisburg, Blandon, Walnuttown, Liedel's, Hyde Park, West Hempfield, Derry Tp., Dorrancetown, Burt, Carroll Tp., Shermansdale, McKeesport, Towanda, Ridley Park; forty-one places, 1,066 cases. December 18 there were 40 cases and 100 houses in quarantine in Philadelphia.

Rhode Island: Providence; 5 cases, 1 death.

Tennessee: Memphis, Nashville, Chattanooga, five villages near Nashville; eight places, 25 cases.

Texas: Victoria, San Antonio, Texarkana, El Paso, Cleburne; five places, 106 cases, 16 deaths.

Vermont: Brattleboro, Pomfret, Washington; three places.

Virginia: Southwest Virginia, Lunenberg, Shendon; three places, 48 cases.

West Virginia: Lewisburg; 12 cases.

Wisconsin: Janesville, Milwaukee, Juneau, Sheboygan, Portage, Jefferson, Elkhorn, DePere, Camp Lake, Beloit, Lewisburg, Neenah, Fort Howard, Madison, West Superior, Green Bay, Manitowoc, Dodge County, Waukesha, Merrimack, Menasha, Wausau, Juda, Granville, Greenfield, Wauwatosa, Raymond, Lake, Dover, LaCrosse, Two Rivers, Liberty, Oneida Reservation, Milwaukee Tp., Ellsworth, Wonewoc, Franklin, South Milwaukee, Muskego, Spring Prairie, Beaver Dam, Rochester, Rhinelander; forty-three places, 1,866 cases, 399 deaths—in Milwaukee, 1,161 cases, 317 deaths; in the State *ex* Milwaukee, 705 cases, 82 deaths; and at the end of the year Two Rivers and Rhinelander were the only infected places outside of Milwaukee.

The foregoing, though by no means complete, shows the wide extent of territory invaded—twenty-five States, one Territory and the District of Columbia, a total of 282 infected localities, with an aggregate of 8,719 cases and 2,084 deaths reported. In five States from which the reports are most complete, viz., Connecticut, Illinois, Michigan, Minnesota, and Wisconsin, there were 132 infected localities, with a total of 1,113 cases, exclusive of Chicago and Milwaukee. An examination of the individual reports leads to the belief that there were fully 10,000 cases of the disease with an aggregate of 3,000 deaths during the year. Twelve infected ocean steamers were detained at the quarantines at Boston, Darien, Ga., Delaware Breakwater, Mobile, and New York—the last being a Thingvalla liner at the port of New York, December 31.

BOOK NOTICES.

Atlas of Clinical Medicine. By BYRON BRAMWELL, M. D., Assistant Physician to the Edinburgh Royal Infirmary, etc. Vol. iii, Part 1. Edinburgh: Printed by T. and A. Constable at the University Press. 1894.

Part I of Vol. II of this excellent work has appeared. The high standard is maintained as in the past. The contents are: 1, The Thyroid Treatment of Skin Diseases; 2, Poliomyelitis Anterior Acuta; 3, A Remarkable Case of Cancer of the Breasts, Spleen and other Organs.

There are several well executed plates accompanying, showing psoriasis, lupus and ichthyosis treated by thyroid extract; also, two plates showing drawings in cases of poliomyelitis.

Transactions of the State Medical Society of Wisconsin. For the year 1894. Madison, Wis. Cl., pp. 504.

This volume is handsomely printed and contains all the papers read at the last meeting of this flourishing society held at Milwaukee, under the Presidency of Dr. B. C. Brett of Green Bay.

It is well edited by Secretary Sheldon and the society is to be congratulated on the excellence of the papers and the typographical appearance of the volume. Dr. Reineking, Chairman of the Committee on Surgery, began his annual report with an appreciative sketch of the lamented Billroth. The next annual meeting will be held at West Superior, Wis., June, 1895. Almon Clarke, M.D., of Sheboygan, is President and C. S. Sheldon, of Madison, Secretary.

The Medical Register of New York, New Jersey and Connecticut for 1894-5. Published under the supervision of the New York Medico-Historical Society. JOHN SHRADY, M.D., Editor. Volume xxxii. G. P. Putnam's Sons. 1894.

This ever-welcome Annual contains the usual guide-lists and information, as to current medical history, for the three States named. The book resembles closely its recent predecessors, being bound in green cloth, as comports with the nickname or quick name that it has held for more than a quarter of a century. The type is newer and the paper cleaner-looking than some former issues, but the general make-up follows the traditions of the book. The only illustration proper to the work itself is a photogravure of the late editor, from 1878 to 1893, Dr. William T. White. The likeness will be readily recognized by members of the ASSOCIATION as belonging to a frequent though quiet fellow member. The information regarding the hospitals and other institutions in and around New York is arranged for local reference chiefly, but it can be made available to others at a distance who have need for consultation or post-graduate training at the metropolis.

Every library of considerable size throughout the country would do well to have a copy of this book for the reference table. This book stands for the best interests and influences of the region whence it issues, and its supporters are the filial sons of the National ASSOCIATION. Dr. John Shrady, the new editor, is not altogether new to the work, since he was one of the earliest of the compilers, when the book was much less of an institution than it is now. He has been identified with the work of the Medico-Historical Society, and with medico-historical research in New York during his whole professional life. He has many qualifications for the editorial charge of this valuable annual. The delayed issue of the volume this year should be remedied, if possible, in 1895; the profession is ready to welcome any annual directory if it appears on or before June 15; if the date is later than that, its members begin to grow more and more querulous; and some become indifferent.

Diphtheria: Observations on its History and Progress, more especially in New Orleans. By JOSEPH JONES, M.D., LL. D., New Orleans. Pp. 28, paper. 1895.

In this brochure Professor Jones makes some valuable suggestions on the causation of diphtheria, its pathology, treatment and prevention. He concludes as follows:

After careful examination of all the available facts relative to the origin, treatment and prevention of diphtheria, I have come to the conclusion:

1. That the United States Government is the proper authority to whom the people should look for the institution of the proper measures for the eradication, treatment and prevention of diphtheria, and similar infectious and contagious diseases.

2. The Congress of the United States should pass the necessary acts empowering the President to appoint three Commissions, composed as follows:

(*a*).—A Commission selected from the surgeons and assistant surgeons of the Regular Army, empowered to make the necessary investigations, furnished with the necessary means to establish the necessary bacteriologic laboratories in the large cities, for the manufacture and continuous supply to the citizens of the United States of the antitoxin serum for the treatment of diphtheria, yellow fever and similar diseases.

(*b*).—A Commission selected from the surgeons and assistant surgeons of the medical officers of the United States Navy, empowered to institute the necessary investigations, furnished with the necessary means to establish the necessary bacteriologic laboratories in the large cities, for the manufacture and continuous supply of the antitoxin serum for the treatment of diphtheria, yellow fever and similar diseases.

(*c*).—A Commission selected from the surgeons and assistant surgeons from the United States Marine-Hospital service, empowered to institute the necessary investigations, furnished with the necessary means to establish the necessary bacteriologic laboratories in the large cities, for the manufacture and continuous supply of the antitoxin serum for the treatment of diphtheria, yellow fever and similar diseases.

These Commissions, after thorough organization, should act in entire accord with each other, and with the State Boards of Health, or with similar commissions appointed by the Governors of the individual States.

It is evident that the United States possesses unlimited supplies of horses in its cavalry aud transportation service; and it is farther evident that with such an arrangement there need never be a scarcity of the antitoxin supply for the treatment of diphtheria, yellow fever and similar diseases.

NECROLOGY.

W. J. HALL, M.D., an American physician, residing in Corea, during the past three years, is reported by a cablegram, dated December 4, to have died from an attack of typhus fever. The last intelligence by mail from him had reference to his helpful visits, as a volunteer surgeon to one of the battlefields in Corea. Dr. Hall was a graduate in medicine at the Bellevue Hospital Medical School, and was an East Side missionary for two or more years, to fit him the better for work among the poorer Orientals. He was only 35 years of age at the time of his last illness, which must have been rapidly fatal.——Thomas P. Norris, M.D., formerly a coroner of Brooklyn, N. Y., died from renal disease on Dec. 21, 1894. He was a graduate of the Medical Department of New York University in 1854, and had been in Brooklyn for the greater part of forty years. He was for a time, however, a practitioner in East Tennessee. He was a native of Ireland, but came to this country when he was about 10 years old. He was a good political speaker, and his services were sought often and occasionally rewarded. He held an important appointive office, that of Commissioner of Charities. His final illness was somewhat protracted.——Sylvester Mead, M.D., of Greenwich, Conn., died December 11, aged 88 years. He was believed to have been the eldest living alumnus of the Yale Medical Institute, he having graduated therefrom in the year 1829. Dr. Mead died in the harness, having continued in the practice of his profession sixty-five years.——Thomas H. Parkes, M.D., of Brooklyn, N. Y., died on December 21. He was an American by birth, of English parentage, and was 31 years of age. He died suddenly from edema of the glottis. Two hours before his death he was present in good health at a social gathering. He was a graduate in the year 1890 at the Long Island College Hospital.——R. H. Cummins, M.D., of Wheeling, W. Va., died December 13, of diphtheria, contracted while in attendance upon several severe cases of that disease. He was a graduate of the University of Pennsylvania and a man of fine character. He met death fearlessly, a martyr to his chosen calling.——George Jewett, M.D., of Fitchburg, Mass., December 16, aged 68.——Joseph W. Taylor, M.D., of Long Branch, N. J., December 18, aged 36.——J. M. Cook, M.D., of Muskegon, Mich., December 21.——Ward Cook, M.D., of Pendleton, Ind., December 24, aged 87. He had practiced medicine for fifty-seven years and was a member of both the county and State medical societies.——J. M. Hopper, M.D., of Rutherford, N. J., December 18, aged 70.——J. M. McMeen, M.D., of Danville, Ill., December 28, aged 65 years.——Dr. Lezenber, at Logansport, Ind., December 24.——F. H. Wilson, M.D., Leavenworth, Kan., December 25, aged 66.——Henry M. Hooper, M.D., Rutherford, N. J., December 21.

SOCIETY NEWS.

The Muskingum County (Ohio) Medical Society held a meeting in Zanesville, December 16.

The Frontier Medical Association held its semi-annual meeting at Huntington, Que., December 19.

The Central Wisconsin Medical Society held a meeting in Janesville December 27.

The Northern Tri- tate Medical Association met at Hillsdale, Mich., December 20. Attendance one hundred.

The Binghamton (N.Y.) Academy of Medicine held a meeting December 18. The program was interesting and the attendance large.

The Academy of Medicine and Surgery of Richmond, Va., held a meeting December 16. The following officers were elected for the ensuing year: President, W. S. Gordon; First Vice-President, V.W. Harrison; Second Vice-President, R. D. Garcin; Third Vice-President, A. L. Wellford; Secretary and Reporter, Mark W. Peyser; Assistant Secretary, W. S. Beazley; Treasurer, J. T. Woodward, and Librarian, J. F. Crane.

Northwestern Ohio Medical Association.—The forty-ninth semi-annual meeting of the Northwestern Ohio Medical Association closed its session at Lima, Ohio, December 19. The following officers were elected: President, J. K. Woods, Lima; Vice-President, Joseph Sager, Celina; Second Vice-President, W. E. Hoover, Lima; Secretary, Chas. Graefer, Sandusky. The next meeting will be held in Findlay June, 1895.

The Kansas City Medical and Surgical Society held its annual election of officers December 22. The following were elected: F. G. Henry, President; J. W. Foster, First Vice-President; Z. Nason, Second Vice-President; Theodore W. Schafer, Third Vice-President; C. M. Stemen, Secretary; Edward Schaefer, Assistant Secretary; P. C. Palmer, Treasurer.

MISCELLANY.

Association of Erie Railway Surgeons will hold their annual meeting January 10 at Youngstown, Ohio; Dr. C. B. Kibler, President.

College of Physicians and Surgeons.—[By telegraph to this JOURNAL.] The annual election of the College of Physicians and Surgeons of Philadelphia was held Jan. 2, 1895. Prof. J. M. Da Costa was elected President, and Prof. John Ashurst Vice-President, for the ensuing year.

Honors for Pasteur.—At a recent meeting of the Municipal Council of Paris, the Superior Normal School was given 1,500 francs for the purchase of a bust of Pasteur and the Council decided that the Rue d' Ulm should be named Rue de Pasteur.

Souchon's Anesthetizer.—Dr. Souchon applied for a patent for his anesthetizer to test the originality of his invention. Having succeeded, he now waives all his rights and privileges in all cases where the patent is used for medical purposes only.

Centenary of Vaccination.—The German Institute for Vaccination is preparing to celebrate, in 1896, the centenary of Jenner's discovery. It is proposed to have at the same time an exposition of all articles concerning vaccination—old and new instruments and methods of preserving vaccine, original manuscripts on variola and vaccinia, medals, portraits and autographs of celebrated inoculators, vaccinators and anti-vaccinators.

Action of High Pressures on Bacteria.—Roger has studied the action exerted on bacteria by compression of the liquids containing them. The pressure varied from 1,000 to 3,000 kilos per cubic centimeter. The staphylococcus aureus and the bacillus coli were not affected, the former retaining its chromogenic powers. At 3,000 kilos the streptococcus had its vegetability and virulence affected. The anthrax with spores after supporting a pressure of 3,000 kilos grew about as well as before, but its virulence was slightly diminished. The anthrax without spores, on the contrary, was strongly attacked both as to vegetability and virulence; the cultures which had supported 3,000 kilos did not die for eighteen or nineteen days. The author thinks—*Le Progres Medical*—that we may thus be able to create a chronic disease analo-

gous to that which Phisalix obtained by inoculation with vaccine from animals with anthrax.

A New Instrument.—Maclean's general utility knife may be carried in the pocket like a common penknife and may be useful for *any surgical procedure* from tracheotomy or tonsillotomy to laparotomy or amputation at the hip joint. It is so

constructed as to be very easily rendered aseptic, and inclosed in a chamois skin envelope, it can be carried in the pocket with absolute safety. Suggested and recommended by Donald Maclean, M.D.

An Entomologic Patient.—The editor of the *Brooklyn Medical Journal* gives the following as an incident, founded on fact: "A few weeks ago an eccentric appearing individual entered the office of one of our most distinguished surgeons, who lives on the corner of two well-frequented streets, and said that he had come from the east end of Long Island to consult a physician whose address he was unable to find. When asked the name of the physician he responded that he could not at the moment recall that either. Then, pausing for awhile, he turned to the doctor and said: 'Well, how are you on worms on this corner, anyway?'"

The Railway Surgeon.—Acceptance and resignation of Dr. Reed. The following is a copy of a letter which is self-explanatory, and consequently needs no comments:

COLUMBUS, OHIO, Dec. 19, 1894.

DR. S. S. THORNE, President National Association Railway Surgeons, Toledo, Ohio.

Dear Doctor:—Having been officially notified of my unanimous election to the position of Editor of the American Academy of Railway Surgeons, and having decided to accept the same, I beg leave to tender my resignation as the duly elected editor of *The Railway Surgeon*, the official organ of the National Association of Railway Surgeons, to take effect Jan. 1, 1895.

With my best wishes for a continuance of the prosperity of the National Association of Railway Surgeons, and the future success of *The Railway Surgeon*, its official organ, I have, my dear Doctor, the honor to remain,

Very respectfully yours, R. HARVEY REED, Editor.

Foot and Mouth Disease in Germany.[1]—The flap and foot-rot (*Maul- und Klauenseuche*) has again broken out among the farm animals in central Germany, notably the Voigtland and Saxe-Altenburg. This is more unfortunate for the farmers in this part of the country, as only two years ago the same disease reduced the stock considerably, and as the drouth of 1893, with its subsequent fodder scarcity, compelled the farmers to slaughter large numbers of their cattle. Though the local authorities are doing their utmost to prevent an extension of the disease, they have, as it appears, not yet succeeded, for nearly every new issue of the official papers mentions new cases. The frequent appearance of the disease in the same locality is, certainly, no evidence of a healthy condition of farm animals.

ANNABERG, Oct. 16, 1894. THEO. M. STEPHAN, Consul.

[1] The Secretary of Agriculture in acknowledging the receipt, by reference from the Department of State, of a copy of Consul Stephan's report, says: "Consul Stephan states that 'the flap and foot rot has again broken out among the farm animals in central Germany.' As no such disease is known in English-speaking countries, it is fortunate that the Consul placed the German designation (*Maul- und Klauenseuche*) in parenthesis, for otherwise it would have been impossible to determine whether this was some new plague requiring unusual precautionary measures to guard against its introduction, or whether it was a peculiar name given to a well-known disease. The English equivalent of *Maul- und Klauenseuche* is foot-and-mouth disease. This is an extremely contagious and rapidly spreading disease, which does not exist on the American continent, and requires the most rigid measures for its exclusion."—*U. S. Consular Reports*, December, 1894.

The Williams Hospital at Pang-Chuang, China.—This hospital has been so named in honor of the late Hon. S. Wells Williams, M.D., who remembered it in his will. The sum of $3,000 here judiciously spent has given the place a walled in plot of ground with buildings and gatehouse. In very busy times there have been 100 male patients and 60 female. The cost of the plant is a little more than one-half what the endowment of a single bed in one of our city hospitals would require. For the sake of argument the capacity of this hospital being placed at 100, the cost of the plant, per bed, may be placed at $30, whereas not a few of ours are rated at fifty to one hundred and fifty times that amount. Dr. Albert Peck, now in charge, states that strangers seek his place from widely scattered and very distant places. Some of them have to travel 200 miles by very tedious means of transportation. Since the spring of 1880 not less than 65,000 persons have visited the hospital or dispensary. The following is an "instructive case" of surgery attended by Dr. Peck: "Years ago, while living at Pao-ting-fu, a little man made his appearance at the hospital with a large tumor on his neck. He had never seen a European before, but came with his mind fully made up for an operation, owing to reports he had heard of us in his country home from patients who had been at the hospital. Against the remonstrances of his friends and neighbors, he had sold his little property in order to get money to live on. His simple reply to these remonstrances was that his life was made a burden to him by his tumor, and he was going to try the foreign doctor and, in the expressive idiom of his language, if he was 'cured well' he could earn some more money, and if he was 'cured dead' he wouldn't need it. The foreign doctor tried to persuade him against so formidable and risky an operation, but without avail. Fortunately, he lived through it, and the healing of the wound went on normally until delayed by a rather severe attack of erysipelas. Before this danger was passed he sent word by the gatekeeper that he must go home, as his money was spent. The patient was told that he would not be allowed to leave yet. But the next morning he was missing. It was supposed that the man had died, but a long time afterward it was learned that he was alive and acting as a self-constituted preacher of the little of Christian doctrine that he had been able to learn while under treatment. While in the hospital he had seemed very stupid; no one thought he had taken in much of the truth; but he had bought and paid for a little elementary book and learned to read it. The simple explanation had remained in his memory, and after his recovery at home he had taken his book with him when visiting the little fairs where all the business of neighboring villages is done; he had been notable as the man with the large tumor, and now when he came around without it he was naturally an object of curiosity. They said he kept a kerchief around his neck, and when the crowd gathered around he would say: 'My friends, when I was in the hospital they taught me of a religion there that is far more precious than the cure of my body. I have a little book here which tells about it, and if you will sit down and let me read and explain it to you, then I'll show you my neck.' His cup was small, but it was just as full as though it were an ocean brimming over."

Louisville Notes.

HEALTH OFFICER'S REPORT.—During the past week there were sixty-two deaths, the largest number, sixteen, being due to pneumonia; and there were ten deaths from phthisis.

MEDICAL TESTIMONY.—The President of the United States recently pardoned a prisoner undergoing sentence in the Jeffersonville Prison. The pardon was granted on a certificate from several medical men that he was incurably diseased. After release he boasted of his good health, whereupon an investigation was ordered and the prisoner was afterward examined by a representative of each medical college in the city, and the first report of the prison physician was corroborated. It was found that he had a cavity in one lung, had hectic pulmonary hemorrhages, night sweats, loss of flesh, elevated temperature and considerable cough.

NEWSPAPER MEDICINE.—As another evidence of the oftentimes ludicrous mistakes made by newspapers in the recording of things medical, anent the case of Zink; the following appeared in large headlines over the report of the physicians' examinations: "Henry Zink will die now sure; the doctors all agree he is in a bad way. Examined by professors of all the medical colleges at the request of Dr. Peyton; he has *palpitation*, moist râles, and *breathes cavernously*." The above lines were culled from the medical report, and the report is made to read: "Physical examination left lung—*palpitation*—increased vocal fremitus, etc.," and palpitation is recorded as one of the ex-convict's troubles.

KENTUCKY SCHOOL OF MEDICINE.—The formal opening and dedicatory exercises of this school were held December 23 at the new hospital adjoining the old building. The profession of Louisville was invited and many ladies were present. Dr. W. H. Wathen presided, Dr. J. R. Marvin gave a history of its erection. He stated that the building is owned in its entirety by the Faculty; that not a cent of money was asked from outside. He congratulated the coming classes of the school because of the advantages offered by the school now being equipped with a hospital in connection with it, and because of the perfect clinical arrangements in the dispensary. Dr. J. H. Broaddus, President of the Board of Trustees in a brief speech dedicated the "Kentucky School of Medicine to the cause of science and for the relief of the sick poor." The guests at the conclusion of the remarks were invited to inspect the building and a collation was served.

St. Louis Notes.

NEW ELECTRIC AMBULANCE.—The new electric ambulance is out of the shops, and was given a trial with members of the Board of Health as passengers. It went into regular service January 1. This is designed to take the place of the ambulance car which was put in operation last summer on the Union Depot Line. It runs by the Female and City Hospitals, and has been used largely in affording transportation to convalescing patients leaving those institutions, as well as taking patients not disabled to those institutions. It is an ordinary car reserved for this special use, and runs on a regular schedule from Tower Grove Park to the switch at Twelfth and Pine Streets. The new electric ambulance was made and fitted up specially for the purpose, and has every ambulance equipment necessary. It is the intention to run switches into the grounds at the City and Female Hospitals, and also to construct an extension from the present terminus of the Tower Grove Division on Arsenal Street to the Poorhouse and Insane Asylum. It is probable that Dr. A. W. Latimer, who has been in charge of the former ambulance car, will remain in charge of the new service.—*Republic.*

DIPHTHERIA CULTURE TUBES.—Health Commissioner Homan is in receipt of the printed instructions to physicians for the use of culture tubes in diagnosing diphtheria. These tubes are for use only in making a correct diagnosis of doubtful cases. It frequently happens that diphtheria is mistaken for croup or laryngitis, especially in the early stages, and the household and neighborhood not being apprised of the contagious nature of the disease, proper steps are not taken to isolate the patient. Thus the danger of contagion is greatly increased. The directions to physicians follow: "The patient should be placed in a good light, and, if a child, properly held. In cases where it is possible to get a good view of the throat, depress the tongue and rub the cotton swab gently, but freely, against any visible exudate or patch. In other cases, including those in which the exudate is confined to the larynx, pass the swab far back, avoiding the tongue, and rub it freely against the mucous membrane of pharynx and tonsils. Without laying the swab down, withdraw the cotton plug from the culture tube, insert the swab, and rub that portion of it which has touched the exudate gently, but thoroughly, back and forth all over the surface of the blood serum. Do not push the swab into the serum, nor break the surface in any way. Then replace the swab in its own tube, plug both tubes, put them in the box, and return the culture outfit at once to the station from which it was obtained. The tubes will be received and report furnished by the department within twelve hours, by mail or telephone, giving the results of the bacteriologic examination without charge."—*Republic.*

Washington Notes.

MEDICAL SOCIETY OF THE DISTRICT.—At the regular meeting of the Society, held December 19, the President, Dr. S. C. Busey, delivered his annual address. He took for his subject, "The Medical Society of the District of Columbia in 1894," and made some important recommendations concerning its future.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended December 22 is as follows: Number of deaths (still-births not included): White, 54; colored, 35; total 89. Death rate per 1,000 per annum, white, 14.04; colored 19.05; total, 15.68. Death rate per 1,000 per annum for corresponding week last year 20.07.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The end of the year will be the occasion of a change at the Emergency Hospital, in which Dr. Leonard Bell, the present resident physician, will retire to take up private practice in his home in Indianapolis. Dr. James R. Church, who is first assistant surgeon, will be promoted to fill the vacancy, and Dr. Peter Smith will become first assistant. A competitive examination was held on the 28th inst., for the position of second assistant physician. The Georgetown, Columbian and Pennsylvania Universities were represented. All the applicants received very high marks and were very evenly matched, but Dr. E. G. Shortledge, of Wilmington, Del., representing the University of Pennsylvania, made the best rating, and was recommended by the examining committee for appointment.

WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.—The two hundred and nineteenth meeting of the Society was held on the 21st inst. Dr. G. B. Harrison read a paper, "The Report of a Case of Puerperal Eclampsia;" a very interesting discussion followed, opened by Dr. A. F. A. King. Dr. H. L. E. Johnson presented a specimen of urine from a case of chronic interstitial nephritis. The urine contained over one-third albumen by volume, which was not coagulated by heat (boiling), addition of small quantity of nitric acid and subsequent standing until cool. A large excess of acid with heat showed the presence of the amount of albumen stated. A small quantity of acid added to cold urine showed a decided cloud, but as the acid passed to the bottom of the tube all opacity disappeared. He had seen only two cases of this condition, one in a puerperal eclampsia case in which albumen was supposed to be absent. This was a specimen of acid albumen or syntonin, and is not frequently observed. He warned against carelessness in urine analysis, especially on the part of examiners for life insurance.

SMALLPOX HOSPITAL RE-OPENED.—The reappearance of smallpox required the opening of the smallpox hospital and as Dr. Nevit was on his wedding trip, Dr. Llewellyn Elliot was placed in charge and has displayed great skill and judgment in its management and the care of patients. The outbreak occurred in a case of confinement December 1 of still birth, with death of mother on eighth day from what was called by her medical attendant, a colored clerk in one of the Departments, puerperal fever. The undertaker noticed the eruption and regarded the case one of smallpox, but relying on the death certificate, thought his fears were groundless and the child was buried in a cemetery here, but the mother after being viewed by her friends here, was carried on a passenger steamer about seventy miles down the river in Maryland, where a public funeral was held in a church. Several cases are reported there as a result with thirteen cases here. The case originated in one of the most thickly populated courts in the district and though the Health Officer has taken every precaution, a great many new cases are expected.

"SUNDOWN DOCTORS" CHECKED BY COMMISSIONER LOCHREN.—The Commissioner of Pensions has issued an order that will prevent clerks in the Bureau, who are physicians, from practicing medicine after office hours. In this branch of the government service, as well as in others, there are a number of graduated physicians who attend patients after office hours, and are known as "sundown doctors."

The order states that if any clerk or employe of the Pension Bureau shall attend patients as a physician or medical adviser, it will be regarded as sufficient ground for recommending that his further services in the Bureau will be no longer required. The danger of bringing contagious diseases to the other clerks and employes, and allowing such diseases to spread in the community is said to be obvious, and has been manifested in recent cases. Moreover, a calling which is likely to require clerks and employes to be up at night, and to demand their prompt attention at all times, is regarded as inconsistent with the proper discharge of their duties in the Bureau. The issuing of the order was caused by a negro doctor, named Johnson, employed in the Bureau, attending a smallpox case, for which he was suspended. While no official notification has yet been issued, it is almost certain that a similar order will be made including the entire Interior Department, not only physicians, but those who engage in any outside work of any other character. This, it is said, will not apply to employes pursuing studies at night. The regular profession, to a man, naturally indorse this action of the Commissioner.

Hospital Notes.

DR. B. D. EASTMAN has been reappointed Superintendent of the Kansas Insane Asylum at Topeka.

THE NEW FREE HOSPITAL for women, at Brookline, Mass., was dedicated January 1.

ST. MARGARET'S HOSPITAL.—The plans for the new St. Margaret's Hospital to be built in Pittsburg, Pa., are nearly completed. The estimated cost of the building is $250,000.

THE NEW ST. LUKE'S HOSPITAL at Davenport, Iowa, will be opened February 1.

E. H. BENNETT.—By the will of the late E. H. Bennett, of Janesville, Wis., the City Hospital of that place receives the sum of $1,000.

DR. FRONTZ, of Williamsport, Pa., has been appointed resident physician to the State Reformatory at Huntington, *vice* Dr. D. P. Miller, resigned.

SAN GABRIEL HOSPITAL BURNED.—Advices from Montevideo report the destruction by fire of a hospital at San Gabriel (Brazil), by Brazilian troops. More than one hundred and twenty rebels perished. It is said that several who tried to escape were forced back into the flames by bayonets.

SPRINGFIELD (MASS.) HOSPITAL ASSOCIATION.—The annual meeting of the Springfield (Mass.) Hospital Association was held December 16. The total number of cases treated during the year was 338.

JANE C. STORMONT HOSPITAL.—The charter of the Jane C. Stormont Hospital and Training School for Nurses, at Topeka, Kan., has been filed. Mrs. Dr. Stormont donated $10,000 toward building the hospital.

THE MANCHESTER BROWN SURGICAL HOSPITAL at Milwaukee, was formally opened December 21. The hospital will be devoted exclusively to surgical cases. The building has accommodations for fourteen private patients and thirty in wards. There are three operating rooms, sun rooms, a diet kitchen, and a dispensary.

THE ILLINOIS STATE BOARD OF PUBLIC CHARITIES has recommended special appropriations as follows, for the various State charitable institutions, for general improvements and repairs: Northern Hospital for the Insane, $94,000; Eastern Hospital for the Insane, $132,000; Central Hopsital for the Insane, $42,300; Southern Hospital for the Insane, $47,720; Asylum for Insane Criminals, $6,700; Institution for Education of the Deaf and Dumb, $22,350; Institution for the Education of the Blind, $26,500; Asylum for Feeble-Minded Children, $27,400; Soldiers' and Orphans' Home, $15,800; Charitable Eye and Ear Infirmary, $12,200; Soldiers' and Sailors' Home, $53,500. Amounts asked for ordinary expenses for the next two years, and upon which the State Board is not called upon to pass, are: Northern Hospital for Insane, $350,500; Eastern Hospital for Insane, $580,000; Central Hospital for Insane, $330,000; Southern Hospital for Insane, $260,000; Insane Criminals, $85,600; Institution for Education of Deaf and Dumb, $210,000; Institution for Education of Blind, $100,000; Asylum for Feeble-Minded Children, $181,000; Soldiers' Orphans' Home, $108,000; Charitable Eye and Ear Infirmary, $54,000; Soldiers' and Sailors' Home, $360,000.

A NEW HOSPITAL was opened at Beaver Falls, Pa., January 1.——A sanitarium for consumptives is to be founded at Liberty, N.Y., on a 200 acre tract of land secured for that purpose.——A pleasant incident of the holiday season, was the trip Christmas Eve, to four of the large hospitals of Chicago by the choir boys of Grace Church. A coach was furnished them by a generous liveryman, Mr. Payne, and the boys visited St. Luke's, Mercy, Cook County and the Presbyterian Hospitals, where they sang in chorus in the corridors, and greatly cheered the inmates of the institutions named.—The Annual Meeting of the Directors of Hartford, Conn., Hospital was held Dec. 20, 1894. Officers were elected as follows: President, Dr. Gurdon W. Russell; Vice-President, Jonathan B. Bunce; Secretary and Treasurer, Ward W. Jacobs; Executive Committee, Henry K. Morgan, Dr. Harmon G. Howe, Thomas Sisson; Committee on Finance, Jonathan B. Bunce, Henry A. Redfield, Henry C. Dwight; Librarian, Dr. William W. Knight. The following medical and surgical staff was appointed: Dr. Gurdon W. Russell, chairman; Dr. P. H. Ingalls, secretary; consulting physicians and surgeons, Dr. Gurdon W. Russell and Dr. Ashbel W. Barrows; visiting surgeons, Dr. George C. Jarvis, Dr. G. Pierrepont Davis, Dr. Harmon G. Howe, Dr. Melancthon Storrs; visiting physicians, Dr. Horace S. Fuller, Dr. William W. Knight, Dr. James Campbell, Dr. Edward K. Root; ophthalmic and aural surgeon, Dr. William T. Bacon; gynecologist, Dr. P. H. Ingalls; orthopedic surgeon, Dr. Ansel G. Cook; pathologist, Dr. Charles C. Beach; physician to the Old People's Home, Dr. Charles C. Beach. The Executive Committee explained the great need of further accommodations for nurses in the hospital, and the matter was referred to the Executive Committee with power to obtain plans for a building, and report to the directors.

THE PUBLIC SERVICE.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from Dec. 22, 1894, to Dec. 28, 1894.

First Lieut. A. N. STARK, Asst. Surgeon, is granted leave of absence for one month, to take effect upon his return to Ft. Sam Houston, Texas.

Capt. JAMES D. GLENNAN, Asst. Surgeon, is relieved from duty at Ft. Sill, Oklahoma Ter., and ordered to Ft. Snelling, Minn., for duty at that post.

LETTERS RECEIVED.

Anderson, Winslow, San Francisco, Cal.; Akins, Wm. T., Chicago, Ill.
Burr, C. B., Flint, Mich.
Cattell, H. W., Philadelphia, Pa.; Conoway, W. F., Ridgely, Pa.
Eastman, Thos. B., Indianapolis, Ind., (2).
Fyke, E. E., Centralia, Ill.; Fay, J., Altoona, Pa.; Fulkerson, W. D., Coffeysburg, Mo.
Gapen, Clark, Kankakee, Ill.; Green, Le Roy, Waterford, Ontario; Guelliott, O., Reims, France.
Hummel, A. L., Philadelphia, Pa., (2); Hazelwood, A., Grand Rapids, Mich.; Heise, W. F. C., Chicago, Ill.; Haines, W. J., West Farmington, Ohio.
Jordan, Edwin O., Chicago, Ill.
Kuhn, G. A., St. Louis, Mo.
Leedom, Charles, Philadelphia, Pa.; Larkins, E. L., Terre Haute, Ind.; Lippincott, J. B. Co., Philadelphia, Pa.
Maltine Mfg. Co., New York City; Morse, F. P., New York City; Meyer, Theo., Salt Lake City, Utah; MacMonagle, B., San Francisco, Cal.; Marchand, V. H., Haubstadt, Ind., Montgomery, E. E., Philadelphia, Pa.; Morse, L. D. Advertising Agency, New York City; Mann, Edward C., New York City; Martin, F. A., Chicago, Ill.
Niles, S. R. Advertising Agency, Boston, Mass.
Paul, Kegan, Trench, Trübner & Co., Ltd., London, England.
Ruggles-Gale Co., Columbus, Ohio; Ramsey, R. T., London, Ky.
Steiger, E. & Co, New York City, (2); Smiley, Chas. W., Washington, D. C.; Souchon, Edward, New Orleans, La.; Stearns, F. & Co., Detroit, Mich.
Thomas, Homer M., Chicago, Ill.
Woodbridge, J. E., Youngstown, Ohio; White, Geo. W., Boston, Mass.; Wahrer, C. F., Ft. Madison, Iowa; Würdemann, H. V., Milwaukee, Wis., (2).